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OUR FATHERS AND THE "SCORBY"*

P. G. SHIPLEY, M.D.

So much has been written about scurvy in the past fifteen years that to make any addition to the accumulated and voluminous literature on the subject may seem "Imponere pelio ossam." However, as one reads over the literature which has lately accumulated on the disease in question, unless one had a considerable familiarity with its past history, one is certain to acquire the feeling that nothing was known of scurvy, except its clinical picture, before the days of Holst and Froehlich. As a matter of fact, our great, great grandfathers who practiced during the eighteenth century knew very nearly everything we know today about scurvy except the terminology which is in vogue at present. The writer, at the risk of being accused of harbouring reactionary sentiments, is sometimes inclined to doubt that medicine is entirely indebted to modern laboratory investigation for its progress, or for the sum total of the still unfortunately scanty collection of hard facts of which it is possessed. The medicine of the past was often in error and frequently ridiculous, but modern medicine includes much which will be shown to be wrong and will serve as the butt for many a jest in the future. Numbers of physicians now regard with disgust the cacotherapy of our ancestors and prescribe dried placenta as a galactagog to newly delivered women. It is true that the modern has contributed much to make medicine a science, and has become wise in many things, but the old time made its contributions also, and in not a few instances an almost uncanny wisdom and foreknowledge induced by observation and experience went hand in hand with blind ignorance and crass stupidity. Much of the knowledge of ancient times has unfortunately, through the accidents of centuries, been

* From the Department of Pediatrics, Johns Hopkins University, Baltimore, Md. Presented before the American Dietetic Association, Baltimore, Maryland, November 1, 1928.

destroyed; some has been or will be rediscovered; more has been buried in rare books and unknown tongues. In all, a great deal of the wisdom of the "dead" past sleeps like Barbarossa until, in the revolving years, recurrent necessity calls it again to light in one or another fashion. So in a great measure has it been with scurvy. Our ancestors drove it from land and sea, and the necessity for detailed knowledge of it, except under certain abnormal conditions, disappeared. The great war brought it again into being and with the new need came renewed interest in its study and with this study acquisition of forgotten lore.

It is not within my power to write a complete history of scurvy. Many of the necessary documents are not available to me and such a history would form a large volume in itself. It can only be briefly summarized. The object of this short paper is only to indicate that the ordinary physician of the eighteenth century had it within his power to know a disease which in his time was a pest to be met in the course of the every day life of folk on land and sea.

The story of scurvy has been written several times in the past and perhaps by none so well, or so impartially, as by Dr. James Lind. It may be said here that the history of a disease may be so written as to buttress up any theory concerning it. A record of the history of a disease, as of a nation, is useless and pernicious when it is consciously, or unconsciously, warped and one-sided. History may be useful only when the testimony is taken as it stands. One-sided evidence may be interesting, but it serves no good purpose; discrepancies, apparent or real, while they may be impossible of interpretation alone, nevertheless are fingerposts pointing to a need for investigation. When the questions they raise are finally solved, they may be found often to lend support to that which they seemed to oppose. Bias, probably unconscious, is observable in almost all historical accounts of scurvy. It is a history of things contrasting. To know it one must read of romantic adventure, and of unremitting toil without rest or change. Interwoven with it are the tales of famous marches, battles, camps and sieges, of military glory and display, and of voiceless, suffering, plundered peasantry. Accounts of scurvy occur in stories of crusades inspired by patriotism, Arthurian chivalry, and the fruitless wars of bigotry and greed. One finds scurvy figuring in stories of the freedom of pathless seas, and of broken wrecks penned forever in squalid hospitals and almshouses. Scurvy was the scourge of famous regiments as they traveled the road to eternal glory and undying fame on filthy, crowded, vermin-ridden troopers. Its history breathes of courage, self-sacrifice, strength, energy, endurance

and fearless incorruptibility, and of cowardice, brutality, greed, weakness, lassitude, bribery, chicancery and treachery.

No doubt the name given the disease was, like the word rickets, of popular origin. It has been said to be derived from the Danish word *Schorbeck* or the Dutch word *Scorbeck*, which mean ulcers in the mouth. Saxon sailors called it *Schorbock* which would seem to signify an intestinal inflammation. Dr. Lind believed the most natural descent of the name was from the Slavic word *Scorb*, a disease. This I suppose to be the equivalent of the modern Russian word *Скорб*, which means sorrow. This etymology is very probable since scurvy was, in the centuries preceding the nineteenth, a scourge in northern Russia and might well have been called the "sorrow" as infection with *bacillus pestis* was called in the middle ages the "plague." The teutonic words quoted above and the high German *Skorbut* would be derivatives of this. Any of these lend themselves to the easy barbarous Latinization *scorbutus*.

In the late mediaeval period and during the renaissance the disease was endemic in the Netherlands, North Germany, Scandinavia, Russia and Siberia, and in scattered areas throughout the British Isles. According to Fabricius (Hildanus) it first appeared in North Germany in 1486. After the discovery of the new world it was described in Canada and New England where it attacked natives and Europeans. Cartier lost twenty-five by death; one hundred of his hundred-ten men were sick while wintering in 1535 at Stadacona (Quebec). In this village twenty-five natives died of the disease (Hakluyt). It was no infrequent visitor in Puritan New England.

Logically it would seem as though the disease should be as old as history and should have appeared in Troy and Carthage and every other beleaguered city since the world began. At sea it might well have been new with Vasco de Gama and Magellan because the ancients made only coastal voyages of relatively short duration with numerous ports of call. As a matter of fact, it was not minutely described as occurring during military operations before the siege of Cairo (1260) by the crusading army of Louis IX, and although Froissart chronicled many a long siege, scurvy is nowhere mentioned in his works. It would be impossible here to discuss the individual outbreaks of scurvy after the renaissance began. It will suffice to say that in all probability few long voyages were made without it, and no army was entirely free from it until toward the end of the eighteenth century when the "lime juice" regulations eradicated it from the Royal Navy. Friend believed the disease appeared *de novo* with long voyages in the fifteenth and sixteenth centuries, and claimed

that it was not mentioned by either the Arabian or Greek physicians. But while this dictum seems to hold as far as the Arabs are concerned, there are certain passages in the works of Greek and Roman authors which may be interpreted as descriptive of scurvy. Hippocrates described two affections that may have been this condition, Εἴλεὸς αιματίτης with foetor-oris, lax gums epistaxis, lassitude and ulcers on the legs and Σηλην μεγας with hemorrhages from the nose, foetor-oris, dropsy and tibial ulcers.[1] Looking back through the centuries, however, it is impossible to tell which, if either, was scurvy.

Pliny described a disease which was called "stomacace and scleretyrbe" which afflicted the Roman army encamped in the Netherlands under C. Germanicus. Victims of this disease lost their teeth and their lower limbs were affected; they were cured by a plant called the *herba Brittanica* (thought to be either scurvy grass or water dock).

We have been unable to find, as was Lind, an earlier account of scurvy in Europe than that given by Olaus Magnus, of the countries in which it was endemic as a result of "their (the physicians) ignorance and the low esteem in which the art was held there." From this plight the unfortunate northern physicians were rescued by the fall of Byzantium and the resulting diffusion of Greek learning throughout Europe. When Hellas resurgant left the mangled corpse that had been Greece, the renaissance began and scurvy came into being in literature. The first account of scurvy at sea is that of Hernan Lopez de Castaneda in his story of the voyage of Vasco de Gama.

Ecthius, the earliest physician to write of the condition, believed that unwholesome food was the *origo morbi* of the disease which was produced

[1] Τὰ μεν ἄλλα ηασχει ηλῆθος τὰ ἀιιτὰ τοῖσι ηροσθεν — ἄρχεταιδέ μεταηώρου γίγνεσθαι τὸ νόσημα — τάδε δὲ ηροσγίγνται ἔκτοῦ στόματου κακὸν ὄζει καὶ ἀηῶ τῶν ὀδόντων τα οὐλα ἀφίσταται καὶ ἀηῶ τῶνρίνῶν αιμα ρεεί. Ενίοτε δε καὶ ἐκ τῶν σκελεῶν ἕλκεα εκφλιινδαίει καὶ τὰ μεν ὑγιάζεται τὰδὲ αλλὰ ηροσγίγνεται καὶ ἠχροιημέλινα καὶ λεητόδερμος ηερι φοιτὰν δὲ καὶ ταλαιηωρεείν οὐ ηροὐιιμος.....καλεέται δὲ ἐιλεὸς ἀιματιτης.

(Emerins edition 1859.) Even in this short passage many differences occur in various editions. For example, in the Frobenius edition, Basle, 1535, ἐν νουσήματι is inserted before ηροσγίγνεται. None are, however, of great importance except that the Frobenius and Froesius editions omit the negative οὐ before ηρόθνμος. The edition of Littre inserts it and probably correctly. It would seem incredible that people in the condition described by Hippocrates should be "sudden and quick to action." It must be remembered, however, that sailors with scurvy often did not feel badly when at rest, and that sudden death often followed ill advised attempts to go on duty when in this condition. This may have been the meaning of Hippocrates. Pliny's description, like that of Strabo, is so meagre as to leave the diagnosis uncertain.

by corruption of the blood or spleen. Dodoneus held the same opinion, but thought it might also result from confinement. Ronsseus believed that cold damp air was implicated in its occurrence, as did Brucceus. This view was also held by Eugalenus[2] for many years the chief authority on this disease, whose work was not only extensively quoted but in some cases copied verbatim by a host of later writers. The early authors, taught by people among whom they worked, looked on diet as the cause of the disease and held unanimously to the belief that scurvy was the result of spoiled, undigestible and salted food, and of spoiled or brackish water. Salt was especially implicated by some in the production of the disease, although by others it was used as a cure (Addington). The first to suggest the lack of fresh vegetables, distinct from fresh wholesome food, as the *fons huius morbi* was Bachstrom, who had his experience with it at the siege of Thorn, although before him many had remarked the efficacy of fruits and vegetables in its cure. Lind (loc. cit.) was of the opinion that the lack of fresh vegetables alone was not sufficient to account for its occurrence. He felt that cold wet weather, damp living quarters and over-clothing were in a large measure responsible for the trouble.

The physicians of the renaissance were indebted to the laymen for the antiscorbutic materia medica. Their only service was to amplify it somewhat, and to prepare *secundem artem*, the material which peasants and seamen brought to their notice. The *pharmacopoeia antiscorbutica* sprang like Minerva full armed into medial literature, and very little can be added today to the list of pharmaceuticals published by Wierus. Nasturtium, becabunga, colewort, and scurvy grass were favorite remedies. The juice of these was used just as expressed from the plant. Sometimes the plant was eaten like a salad. Sometimes decoctions of the plants were made, or the fresh herbs were extracted with wine (water or alcohol soluble C).

Pickled cabbage twice or thrice a week was used by the Dutch sailors as a preventative and a cure. Oranges were used first by seamen and the first physician to recommend them was Ronsseus. The juice of lemons was, so far as I am aware, first suggested by John Woodall[3] in a well

[2] Origo hujus mali esse putatur, cum ab aere crasso, frigido & humido: tum vel maxime ab aquis frigidis, crudis, & subsalsis, quibus toto hoc maritimo tractu fere utimur omnes.

[3] The use of the juyce of lemmons is a precious medicine; and well tried, being sound and good, let it have the chief place for it will deserve it, the use whereof is: It is to be taken each morning two or three spoonfuls, and fast after it two hours and if you adde one spoonful of *Aquavitae* thereto to a cold stomach it is better.

written chapter on scurvy which deserved a far greater popularity than it attained.

It has been a source of some wonder of late that the occurrence of scurvy among children should have remained unnoticed and undescribed, save by Glisson, for so long a period of time. This is, however, susceptible to easy explanation. In the first place, the physicians of the sixteenth and seventeenth centuries did not feel the necessity of describing separately the occurrence in children of a malady which also afflicted adults. Armstrong, in 1767, stated that after all "excepting what the nurses call inwards fits, teething and the rickets, I do not recollect any particular disorder that infants and children are subject to, which adults are exempted from."[4] Scurvy in a child was to them only scurvy; it was not Barlow's disease. Another and more tragic explanation is found in the enormous infant mortality during this period. It may almost be stated as an aphorism that in the seventeenth century hand-fed children did not live to develop scurvy.[5]

In spite of all this, there is abundant evidence that scurvy was known to attack children before Glisson mentioned it as a possible disease of infancy. Brucceus stated that the children of scorbutic mothers were scorbutic, and that women with scurvy were wont to miscarry. Alburtus believed that scurvy might be hereditary or contracted from an infected nurse. Eugalenus mentioned an infant, suckled by a scorbutic mother, who was scorbutic. William Clowes, surgeon to her Majesty, Queen Elizabeth, surgeon in the Royal Army and Navy, sometime surgeon of the hospital of St. Bartholomew in Smethefield, saw twenty or thirty children at one time in Christ's Hospital suffering from "scorby." The earliest case report about a child, however, seems to be contained in a letter from Ludovic Schmid to Fabricius Hildanus (fig. 1).[6] This letter describes the condition in the fourteen months old child of the Markgraf of Baden.

After the time of Glisson no specific mention is made of scurvy as a

[4] Armstrong, G. An essay on the diseases most fatal to infants. London, 1767.

[5] "To the same Causes was owing an Observation, which was made not long ago by a worthy Divine, Rector of a Parish 12 miles from London, who with great Grief of Mind told me seriously, that his Parish, which was not small either in its Bounds or Number of Inhabitants, and was situated in a very wholesom Air, was when he first came to it, filled with sucking Infants, and yet in the Space of one Year, that he had buried them all except two" . . . . Harris, Walter. Acute Disease of Children (Martyn's translation), London, 1742.

[6] It is a pleasure to thank Mr. Councilor, Assistant Librarian at the Surgeon General's Library, Washington, D. C. for the excellent photostat from which this figure was made.

Clariſſimo atque Experientiſſimo viro, Domino GUILHELMO FABRICIO HILDANO, *Inclytæ Bernatum Reipublicæ Medico-Chirurgo ordinario, Collegæ atque Fautori ſuo ſingulari,*

LUDOVICUS SCHMID *Med Doctor, & Illuſtriſſimi Principis ac Domini, Dn GEORGII FRIDERICI, Marchionis Badenſis & Hochbergenſis, &c. Archiater S. P. D.*

GRatiſſima fuit de Epilepticis præpoſterè curatis Tua, Clariſſime Vir, ad mè perſcripta obſervatio: tuaque genuina ac methodica, ipſoque eventu comprobata ejuſdem morbi curatio. Interea quid nuper apud nos contigerit, accipe. Principis noſtri Filiolus natu minor CAROLO-MAGNUS Menſe Majo, qui decimus quartus ætatis erat, quùm jam pedibus firmis incedere rectus cœpiſſet, repentè dolore

lore oborto extendere amplius crura renuebat, coactus præ dolore exclamabat. Foris nihil præter naturam cernebatur, præter maculam cæruleam, quæ Principi Matri, & vocato Medico ac Chirurgis perſuadebat, caſum aut contuſionem mali cauſam extitiſſe. Ego demum Junio menſe Stutgardiam miſſus, vidi crus ſiniſtrum mæquali duro tumore, lividis, cæruleis, purpureis maculis admodum deforme, cujus articuli ad malleolos & genu præ dolore ægrè extendebantur. Dextera item tibia non magis ad motum apta, cæterùm extenuata exiſtebat, palati anterior pars quoque livida, atro ſanguine referta, tumeſcebat: febricula quinetiam lenta alternis diebus invaleſcens acceſſit: quam Diarrhæa varii craſſi ac lenti humoris comitabatur. Ego Scorbutum eſſe judicavi, aliisque perſuaſi, meamque ſententiam curatio huic morbo conveniens fecit cum ſucceſſu DEI beneficio adhibita, veram eſſe demonſtravit. Quæ vero in tenello Generoſiſſimi pueri corpore origo morbi adeo hiſce locis inſueti adeoque inauditi ſtatuenda videatur, abs te per otium perdiſcere deſidero: DEUM Optimum Maximum etiam atque etiam orans, ut Te cum tota familia plane Aſclepiadea ſartum rectum conſervet. Vale. Exemplar Epiſtolæ Clariſſimi Viri Dn D. Stugelii exas Sereniſſimo Principi, volente DEO, tradam: Teq; de S.C. voluntate faciam certiorem. Iterum optimè vale. Durlaci. Cal. Octob. Anno 1612.

FIG 1

special disease of childhood until Barlow in 1894 recognized it in the disease which had been described as "acute rickets."

Aside from the use of antiscorbutic remedies *sensu stricto* there was no great unanimity in the course of treatment. One recommended and another condemned catharsis, emetics, enemata, phlebotomy, steel, mercury, salt, etc. It was along the line of therapeusis, however, that our ancestors progressed furthest. They were quite familiar with all the antiscorbutic vegetables we know and they were well informed about the antiscorbutic value of milk and its derivatives (whey, etc.). It is only a short time since it was found experimentally that, whereas cereal grains have no value in curing or preventing scurvy, they are able to synthesize the water soluble C factor during the process of germination. This, which was hailed as one of the most important of the discoveries which have been made about vitamins, was the common knowledge of every naval surgeon in the latter half of the eighteenth century, and more than one surgical treatise (vide Falk) recommends that seed grain should be taken aboard ship to be sprouted in earth or wet cotton, for use against scurvy, should lemon juice fail in an emergency.

Infusions of the needles of evergreen trees were used successfully in the treatment of scurvy ridden children in the central empires during the late war. The same infusions were esteemed specific by the Swedes after the army of Charles XII had rid itself of scurvy by their use. Cartier's soldiers learned to use the needles of the pine or spruce against scurvy, from the Indians.

Our fathers were familiar with the fact that drying and cooking diminishes the potency of vegetable foods against scurvy (Cramer-Mead). They learned, or at least some did, that acids, such as the elixir of vitriol and the spirit of salt (HCl), while they made the patient more comfortable and the disease more tolerable when used as gargles and mouth washes, failed as a cure. They believed that the leaves of tobacco possessed antiscorbutic virtues—an interesting credence in the light of Percy Howe's recently enunciated theories with reference to the relation between subscorbutic states, pyorrhea and dental caries, and the well known comparative immunity of tobacco chewers to these two conditions. They were as familiar as are we today with the gross pathology of the disease—the haemorrhages into muscles and skin and beneath the periosteum and in the marrow of bones. They knew of epiphyseal separation, of metastatic enteritis and stomatitis, effusions into serous cavities, and of fatty degeneration of the organs of the body and cardiac dilatation (Poupart). They saw the loss of teeth, the destruction of maxilla

and mandible and the resolution of the calluses about old fractures.[7] Clinically speaking, we have added nothing and forgotten some of the knowledge of an older day. Even the cardiac manifestations of scurvy, the *Barlowherz* of the German authors, were known and appreciated. The sudden, cardiac death of soldiers or seamen following ill advised attempts to move them when suffering with the disease, or brave efforts to go on duty on the part of sufferers themselves forced the "scurvy heart" on the attention of the surgeon. The practitioner of the eighteenth century was clearly aware of the existence of what may be termed prescorbutic and subscorbutic states, with lassitude, anorexia and general debility quickly relieved by the administration of antiscorbutics.[8]

While, in general, the accounts of scurvy which have come to us from the past support the hypothesis that it is a deficiency disease, there are certain records left which tend to show that the old authors were justified to some extent in their belief that abstinence from fresh vegetables alone was not sufficient to account for its incidence. We may pass by many of the arguments which were adduced to show that unfavorable climatic conditions played a part in the etiology of scurvy with the truism that, in the presence of an insufficient vitamin supply, any malign influence, as bad weather or hard labours, may turn the scale against the victim and force him over the brink into deficiency diseases. This argument may be used to account for the different rate of incidence of scurvy on board the same ship, with the same rations, on the same cruise, but under different weather conditions. Of course, such an explanation explains nothing and reminds one of Moliere's student and his "Quia est in eo virtus dormativa." It is not easy to explain away the testi-

[7] Bachstrom noted in men at the siege of Thorn that the bodies of those dead with scurvy putrify sooner than others and become remarkably fetid. I have noticed that this is also true of animals which have died or been killed while receiving certain deficient diets.

[8] When I came home to this country (Britain), I found the denomination of nervous disorders universally applied to most chronic and cachectic ailments. Upon examining these complaints in the lower sort of people who live entirely on farinas and a gross diet, I observed, they had a universal lassitude, pains which they termed rheumatic flying though their body and a breathlessness upon using exercise. The legs were sometimes swelled, and the abdomen almost always tense and tumified. But whether they had swellings or not, they had generally an ill colored scorbutic complexion, and were listless and inactive to a great degree, with complaints of pains in their jaws, teeth, etc. I made no scruple to pronounce such cases scorbutic; and by proper antiscorbutic regimen, medicines, diet, and exercise, seldom failed to give very sensible relief. I have disobliged many patients by saying they had the scurvy; a disease as hateful as it is unknown in this part of the world; but the relief they obtained from antiscorbutics, soon convinced them and myself that their cases were not mistaken. (A letter on scurvy from Dr. John Cook, physician of Hamilton, 1753.) See also Falk.

mony of men like Dr. Mead and to ignore utterly the cruise from Portsmouth to Cape Colony where the ship arrived without scurvy on board, to be the talk of the town for a month. Mead was specific in stating that the ship was provisioned in the ordinary way and that the only difference in her equipment lay in that she was furnished with a Mr. Sutton's ventilators. Lind believed that she had scurvy on her return voyage and that on her way down she frequently took on fresh provisions. However it may be, Lind himself calls attention to the fact that many long voyages were made with very little scurvy among the men.

From the foregoing account, it may be seen how much of the laboratory and clinical research of the past fifteen years on the subject of scurvy had been anticipated by the physicians and surgeons who lived before the end of the eighteenth century, and this without any laboratory assistance. We know but little more than they did about the disease in question. Their methods and habits of thought are so often held up to ridicule now, and the motes in their eyes so often pointed out, that one cannot but feel that on occasions it may be healthful for their descendants, as well as justice to them, to point out that they had their successes as well as their errors. They worked stoutly and never doubting amid disadvantageous circumstances which are undreamed of today and they observed as well if not better than we do. If this paper can help instil into others the veneration and respect which I have for those sturdy battlers against death and disease who fell before us and who rest now in cathedrals, in quiet church yards, or unremembered on forgotten fields or beneath the sea, its purpose is accomplished. May we give as they did and add as much to medicine as they. May their virtues be ours, with others of which they knew nothing, and

> Down out of heaven, or up from the mould,
> Send us the hearts of our fathers of old.

THE DIETITIAN AND NORMAL NUTRITION*

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The criticism is frequently made that dietitians in general are far too dogmatic in their statements about food, and have too little resourcefulness in adapting their knowledge to new or changing situations. This is particularly true when diets must be planned for low income groups, for those with racial dietary prejudices, or for communities with restricted or unusual food supplies. To the average nutritionist, the only adequate diet is the conventional American one, and any diet that departs radically from this is regarded as hopelessly faulty. This viewpoint was expressed recently by a student at the beginning of our dietary course, when she described with serious concern the extremely unsuitable, inadequate diets of a certain racial group among whom she had lived for a considerable period of time. The thing that puzzled her particularly was the remarkably fine physique of these people who were, according to her standards, faring so badly in a dietary way. When she checked up on the diet later in the course, by standards of adequacy, rather than by its conformity to American standards, she was surprised to find that far from being inadequate the diet was much superior to our usual American one.

The well-trained nuritionist, in whatever capacity she may be, needs to know that an adequate diet may be secured in a multitude of ways, and she should be given practical experience during her period of training in planning such varied diets and in checking the different racial or community diets for their probable adequacy. This article describes a graphic method used in our dietaries classes for teaching this point to our students.

In the first part of the course, the different requirements of the body under varying conditions are discussed, together with the contributions which the different foodstuffs may make toward fulfilling these needs. Having covered these requirements individually, the students are ready

* Submitted for publication February 18, 1929. The term dietitian here includes all nutrition trained people who as hospital or social service dietitians, teachers of nutrition, or in other capacity are privileged to disperse information about food.

to consider the problem of how a diet adequate in all these factors—calories, protein, minerals, and vitamins—may be secured. An excellent attack on this problem is first to ask the question, "Can any one food alone furnish an adequate diet?" To answer this question the standards for an adequate diet for an adult, as formulated by Sherman, are first set up and a number of individual foods are quantitatively put to the test. In each case the query is: If a 70 kilogram man should eat his full 3,000 calories of the food in question, would the diet be adequate in other essentials? The answer for some twenty of our common foods is shown in table 1.

Of course, one would know, without putting them into such a table, that the pure carbohydrates and fats—represented by sugar and lard in the table—would fail hopelessly in this respect, but it makes a graphic beginning to show that calories are all that these foods do supply. When we come to the fruits and vegetables we are not so sure how far they can go towards an adequate diet without putting them to the test. The first difficulty observed is that the quantity one would be required to eat—as 30 large apples, or 60 cups of cooked spinach—are impossible amounts for the human digestive tract. But assuming the amounts were possible, how would the diet measure up in other factors? It is seen that apples, even in this large quantity, would fall short of the requirements, particularly in protein, calcium, phosphorus, and vitamin A. Cabbage and spinach, on the other hand, more than generously cover all requirements—unless it be the quality of the protein. Instead of furnishing our bare standard of 0.67 gram of calcium, for example, spinach yields more than twelve times this amount, as well as some seven times the phosphorus, and thirty times the iron standards. Of course, a diet of spinach or cabbage would not be a practical one for human beings because of its bulk, but it is easy to see how valuable smaller amounts would be in the human diet. It is also obvious from this table how the herbivorous animals whose digestive tracts are able to accommodate large quantities of food can be strong and well-nourished on a vegetable diet, especially when we remember that they consume mixtures of leaves and also the seeds contained in the plants which they eat, thus securing both seed and leaf proteins, which we know are excellent supplements to each other. The buffaloes that formerly grew to great size and strength on our western plains on just such diets are excellent examples of the success of a vegetarian diet, and the table shows graphically how this is possible, assuming their requirements are similar to those of man.

Bread is probably the first food in the list on which mankind often

tries to subsist alone. A glance at the table shows that the old saying "Man cannot live by bread alone" is literally true, especially when white

TABLE 1

Can any one food furnish an adequate diet?

	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS			LAXATIVE
				Ca	P	Fe	A	B	C	
Requirement.....		3,000	75	0.67	1.32	0.015	+++	+++	+++	+++
1. Sugar.....	Nearly 4 cups	3,000					−	−	−	−
2. Lard.....	2 cups	3,000					−	−	−	−
3. Butter.....	2 cups	3,000	4	0.06	0.06	0.0009	++	−	−	−
4. Apples.....	30 large or 60 small	3,000	19.0	0.36	0.60	0.014	?	+	+	+
5. Cabbage.....	60 cups cooked	3,000	152	4.30	2.76	0.105	+	+	+	+
6. Spinach.....	60 cups cooked	3,000	264	8.40	8.6	0.45	+	+	+	+
7. Orange.....	40 medium	3,000	46.5	2.60	1.2	0.012	+	+	+	+
8. Bread (white)...	30 lrg. slices	3,000	105	0.33	1.05	0.010	−	−	−	−
9. Bread (entire)...	30 lrg. slices	3,000	118	0.60	2.13	0.020	?	+	−	+
10. Oatmeal.....	10 cups dry 20 cups cooked	3,000	126	0.51	2.9	0.029	?	+	−	+
11. Corn (bolted)....	8½ cups dry 20 cups ckd.	3,000	75	0.15	1.59	0.009	+ If yellow	−	−	−
12. Corn (entire)....	20 cups	3,000	90	0.18	3.06	0.024	+ If yellow	+	−	+
13. Potatoes.....	30 sm. or 15 cups mashed	3,000	79.5	0.48	2.1	0.047	−	+	+	?
14. Beefsteak.....	4 lbs.	3,000	390	0.23	4.2	0.060	−	?	?	−
15. Eggs.....	40 med.	3,000	270	1.35	3.7	0.060	+	?	−	−
16. Milk.....	17 cups or 4 qts.	3,000	143	5.2	4.0	0.011	+	+	?	−

bread made with water is considered. The quantity might be possible, if this were the only food eaten, but a total white bread diet would not

furnish even half the calcium needs, would be well under the standards of phosphorus and iron, and would be exceedingly low, if not deficient, in all the vitamins. Yet many of our city poor try to live on a diet consisting largely of bread and coffee. With milk in the coffee, and bread made with milk, the diet would be much improved, though still not safely adequate. A whole grain bread is seen to be much superior, though still low, especially in some of the vitamins. The cereals, refined and unrefined, correspond closely, of course, to white and whole grain breads respectively; and potatoes are similar to the whole cereals, though superior in some respects, notably in vitamin C, and in the fact that they yield a basic residue on oxidation in the body instead of an acid one as do the cereals.

Meat is another food on which man has frequently tried to live, almost or quite exclusively. For the computation in the table, muscle meat, which is the kind most commonly regarded and eaten by Americans as meat, has been used. A diet consisting solely of this foodstuff is seen to be generously above our modest standards for protein, for phosphorus, and for iron. Even with the total diet made up of meat, however, the calcium would still be notoriously low—not even one-fourth of the standard—and the quantity of vitamins, especially vitamin A, would be decidedly questionable. "How then," one may ask, "do the carnivorous animals and the largely carnivorous races like some tribes of Eskimos, for example, manage to survive on animal tissues alone?" The answer is obvious to any student of nutrition: Because neither carnivorous animals nor carnivorous races of human beings live on muscle meat alone. Indeed, the beast of prey is said to prefer the blood, the heart, the lungs, and other viscera, and to eat muscle meat only if these are not available. Small bones are also chewed by them with relish. The same is more or less true of our carnivorous races. It is obvious that such a carnivorous diet could easily cover our requirements for an adequate diet, since the glandular organs are sources of the vitamins, and these, together with the blood and the small bones, would supplement the calcium deficiency of the muscle meat diet. Some of these races, moreover, have fair amounts of vegetable food, as from seaweed or other sources.

Milk has been left for the last of the single foods for consideration because of the statement so commonly made that "milk is the only perfect food." A glance at the table shows that it does indeed come more nearly to being an adequate diet, in the amounts that could reasonably be eaten, than any other food listed, being high in protein of an excellent quality, generous in calcium, in phosphorus, and—under suitable condi-

tions of production, at least—in all the vitamins, unless it is D. Even milk, however, fails to measure entirely up to Sherman's standard for iron, and since milk is so completely digested and absorbed it is non-laxative in character. Certain it is that experimental animals kept for long periods of time on a diet solely of milk become anemic, due, possibly, to the lack of iron or copper and other inorganic salts which have recently

TABLE 2

Simple combinations that make an adequate diet

FOOD	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS			LAXATIVE
				Ca	P	Fe	A	B	C	
Combination 1. Milk, whole cornmeal, fat										
Milk (to drink and in food)	2¼ qts.	1,500	71	2.6	2.0	0.0050	+	+	+?	−
Whole cornmeal		1,000	31	0.06	1.0	0.0080	?	+	−	+
Fat		500					?	−	−	−
Total		3,000	102	2.7	3.0	0.013	+	+	+?	+
Standard		3,000	75	0.67	1.32	0.015	+	+	+	+
Combination 2. Milk, potato, fat										
Milk	2¼ qts.	1,500	71	2.6	2.0	0.005	+	+	+?	−
Potato	10 med.	1,000	27	0.2	0.7	0.016	?	+	+	?
Fat		500					−	−	−	−
Total		3,000	98	2.8	2.7	0.021	+	+	+	?
Standard		3,000	75	0.67	1.32	0.015	+	+	+	
Combination 3. Milk, oatmeal, fat										
Milk	2¼ qts.	1,500	71	2.60	2.0	0.005	+	+	+?	−
Oatmeal	6 cups	1,000	42	0.17	1.0	0.010	?	+	?	+
Fat		500					−	−	−	−
Total		3,000	113	2.77	3.0	0.015	+	+	+?	+
Standard		3,000	75	0.67	1.3	0.015	+	+	+	+
Combination 4. Any one of the above, plus a leafy vegetable										
Milk	2¼ qts.	1,500	71	2.60	2.0	0.005	+	+	+?	−
Oatmeal		900	38	0.15	0.9	0.009	?	+	−	+
Cabbage	2 cups	100	5	0.14	0.1	0.004	+	+	+	+
Fat		500					−	−	−	−
Total		3,000	114	2.89	3.0	0.018	+	+	+	+
Standard		3,000	75	0.67	1.32	0.015	+	+	+	+

been shown to be essential to hemoglobin formation (1, 2), and to supplement a milk diet in respect to its growth properties (3).

To the question set up at the beginning, therefore, the answer must be, "No, there is no individual food which eaten in amounts that are possible to the human digestive tract will alone furnish an adequate diet, according to our present dietary standards." A glance at table 1, however, clearly shows that there are numerous combinations of two or three foods which supplement each others' deficiencies in such a way as together to make an adequate diet: milk with cabbage or spinach, or milk with any of the whole grain cereals, or with potatoes, these being the ones that most readily suggest themselves to the eye. Table 2 shows some such simple combinations of foods that could readily be made, the amounts of each food being dogmatically chosen as reasonable ones if the diet were to consist solely of the foods in question. Each of these diets represents, in fact, the main foods entering into the diets of a certain race or com munity. Combination 1, consisting of whole cornmeal, milk, and fat meat, represents, for example, the characteristic diet of large numbers of our southern mountaineer population; the diet of milk (or rather, buttermilk) and potatoes is a staple diet of the Irish peasant, and the one of oatmeal and milk is said to be typical Scotch peasant fare. It is not that these peoples never have any other foods, but rather that these foods may compose the bulk of the diet and may often be the sole diet for long periods of time. A glance at the totals under these simple diets shows that each of them could probably be considered as meeting fairly well the various food needs, provided that the milk is produced under such conditions as to be a good source of vitamins A, B, and C, and assuming sunshine to be the source of vitamin D. The addition of a leafy vegetable to any one of these three diets, however, would make it much more certainly safe, as is shown in combination 4. On a diet of milk, whole grain cereal, and a liberal amount of cabbage or other leafy vegetable—part of it at least consumed raw—man could apparently thrive indefinitely. Indeed, the physically fine human beings that have been produced on just such simple monotonous diets as these are the best proof of their entire adequacy.

It is interesting to go further in this direction and examine in the same way diets of other racial or social groups, especially those whose state of nutrition and general physical development are known, in order to determine the extent of agreement between human experience and our present standards of good nutrition. Do the diets of groups that are known to be physically superior invariably measure up to our standards of ade-

quacy; and is physical deterioration in other groups such as might be expected from the diets on which they live? In our classes, various students are assigned different diets to check by this method, the ones assigned depending on the experience and background of the students and the diets with which they are familiar. Occasionally there have been foreign students in these classes, and others who have gained first-hand information about racial diets by residence in foreign countries or in a foreign section of our own country, as missionaries, teachers, dietitians, or social workers. Diets which have been thus examined for their adequacy are the Chinese, Italian, Austrian, Polish, Slovakian, English, East Indian, and American Indian, as well as those of the people

TABLE 3

A Slovak diet in the old country (approximated from data given by a Czechoslovak student)

FOOD	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS			LAXATIVE
				Ca	P	Fe	A	B	C	
Potatoes	3 med.	300	8.0	0.05	0.21	0.005	−	+	+	?
Rye flour (in bread, dumplings, etc.)		1,000	35.4	0.09	0.58	0.006	?	+	−	+
Butter and other fat	5 tb.	500					+	−	−	−
Cabbage	2 cups	100	5.0	0.14	0.09	0.004	+	+	+	+
Fruit (prunes etc.)	4–6 prunes	100	0.7	0.02	0.04	0.001	−	+	+?	+
Milk (cheese etc.)	1½ qt.	1,000	47.5	1.74	1.34	0.004	+	+	+?	−
Total		3,000	97.0	2.04	2.26	0.020	+	+	+	+
Standard		3,000	75.0	0.67	1.30	0.015	+	+	+	+

of England, Labrador, and various communities in the United States. The method has been for the person familiar with the diet to make an approximation, based on her observations, of the amounts of the various foodstuffs that might enter into the diet of a typical day, and then to compute its food value as has been illustrated. One of the most enlightening of these was made on the Slovak diet by a Czechoslovak student who compared the diet and physical condition of the Slovaks "back of the yards" with those of the Slovaks in their native land. In the old country she had observed that the staple articles of the Slovak diet were: sour milk and cream, and cottage cheese made from them; black rye bread; cabbage which is used fresh in summer and as sauerkraut in winter; and dried fruits, such as apples and prunes. Other vegetables, fruits, meat, and foods grown on their own farms were also in the dietary during

certain seasons of the year. Sugar was expensive and little used, as were also coffee, meat, and all refined cereals. These foods, therefore, as well as all refined foods, entered little, if any, into their dietary. Assuming that the amounts given in table 3 are even approximately those actually eaten, it is easy to see that this diet, though monotonous and perhaps not appealing to the American palate, is nevertheless a superior one from the nutritional standpoint. It is not surprising, therefore, to learn of the sound teeth and good physical development reported for the people living on such food combinations.

TABLE 4

Diet of Slovaks "Back of the Yards" (approximated)

Also often referred to as a typical American dietary

FOOD	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS			LAXATIVE
				Ca	P	Fe	A	B	C	
Bread (and white flour products, as cake, pastry, macaroni, or other refined cereals)		1,500	53	0.17	0.53	0.005	−	−	−	−
Meat (muscle)	2 servings	300	45	0.02	0.40	0.006	−	?	−	−
Potatoes	2 med.	200	5	0.03	0.14	0.003	−	+	+?	?
Sugar		500					−	−	−	−
Fat	5 tb.	500					−	−	−	−
Coffee, tea, etc.										
Total		3,000	103	0.22	0.97	0.014	?	?	?	?
Standard		3,000	75	0.67	1.32	0.015	+	+	+	+
Same diet with ½ pt. milk		3,000	105	0.50	1.14	0.014	+?	+?	+?	+?
1 pt. milk replacing bread		3,000	107	0.77	1.30	0.014	+	+	+?	+?

In contrast, both as to adequacy of the diet and the physical status of the people, is the situation of the same race in this country. Coming from a country where milk, green vegetables, and whole grain bread were home produced at a low cost, to one where these products were relatively high and where the white bread, coffee, meat, and sugar, which were luxuries at home, are relatively cheap, it is not surprising to find that they have changed their simple, monotonous but adequate, diet for the distinctly inferior one of bread, meat, refined cereal, coffee, and sweets, which is often termed the typical American diet. Such a diet is shown in table 4. It is seen to be strikingly deficient in calcium and low in vitamin A, unless butter is the fat used; the supply of vitamins B and C will be largely dependent on the quantities of potatoes used. Such

a diet bears out the statement of Sherman that the American diet is more likely to be lacking in calcium than in any other single constituent. Indeed, if one were set the task of selecting a diet deficient in calcium he could scarcely do better than to choose the very one here listed. What wonder, then, that the Slovaks "back of the yards" are physically inferior to those of the homeland, especially in respect to their susceptibility to dental caries, as are other Americans who try to live on this diet.

TABLE 5

Is the usual home economics formula for insuring an adequate diet "fool-proof?"

FOOD	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS		
				Ca	P	Fe	A	B	C
1. Milk	1 pint	336	15.0	0.590	0.49	0.0012	+	+	?
2. Egg	1	75	6.0	0.035	0.09	0.0015	+	+	?
3. Meat or fish or fowl	1 medium serving	150	22.0		0.20	0.0030	−	−	−
4. Vegetables:	2 servings								
Carrots	1 cooked	35	0.8	0.040	0.03	0.0004	+	+	?
Lettuce	1 raw	15	1.0	0.040	0.04	0.0006	+	+	+
5. Fruits:	2 servings								
Apple (cooked)	Large	100	0.6	0.012	0.02	0.0005	−	+	?
Orange	Medium	80	1.2	0.070	0.03	0.0003	+	+	+
6. Whole grain cereal (bread or breakfast food)	1 serving	100	4.2	0.017	0.10	0.0010	−	+	?
		891	50.8	0.804	0.95	0.0085	+	+	+
Calories completed by									
7. Bread, flour refined cereals, etc.		1,000	35.0	0.11	0.35	0.0035	−	−	−
8. Sugar		500					−	−	−
9. Fat		600					−	−	−
Total		2,991	86	0.91	1.30	0.0120	+	+	+
Standard		3,000	75	0.67	1.32	0.015	+	+	+

Fortunately, most get some milk either in coffee or in food and it is easy to see—as shown at the bottom of table 4—how even small amounts of milk would help this diet, and how a pint of milk would literally be its salvation.

After noting the inadequacies of this so-called American diet, an attempt is always made by the students to formulate some dogmatic rules which, if routinely followed, would without further planning insure at least a barely adequate diet. The formula most commonly arrived at is shown in table 5. This formula includes daily: one pint of milk;

one egg; one serving of meat, fish, or fowl; two vegetables, one preferably raw; two fruits, one raw; and at least one serving of whole grain cereal, either as a breakfast cereal or as a whole grain bread. In the table this rule has been literally obeyed, the rest of the diet being made up of refined cereals, sweets, and fats, as it more than likely would be in the case of a person with no further dietary knowledge. Is it safe? The computations show that it probably is barely so. There is none too generous a margin of phosphorus or of iron, but in general it is fairly well up to standards. While the formula cannot be claimed to insure an ideal diet, therefore, it may probably be regarded as "fool-proof" to the extent that a person who dogmatically follows it would have at least a bare minimum of his food needs. Even this diet, however, which is probably better than the average American one, is not such as to warrant any feeling of superiority over other races in respect to the relative adequacy of the diets. Indeed, most of the peasant diets are far superior to our own.

In every adequate diet listed thus far, milk has occupied a major place. In fact, there is no better way of giving students a realization of the value of milk than to set them the task of planning an adequate diet without it. They struggle with the problem, and though they eventually find that it can, of course, be done, they likewise discover that it requires the use of larger quantities of vegetables, eggs, and other calcium high foods than they are accustomed to or would find it easy to eat. The ease with which the same task can be accomplished if one could have a pint—or even one cup—of milk makes them realize that milk is truly a "protective food."

The Chinese diet also makes an excellent attack on this problem. It is generally known that the usual Chinese diet contains no milk and that it does contain large quantities of rice. It is often offered, then, as a direct contradiction of our theories of nutrition, that the Chinese apparently thrive on diets falling far below our standards. But do they? Dr. Chi Che Wang (4) wrote an article a few years ago showing that the popular idea that the Chinese live entirely upon rice is quite erroneous; that their diet contains generous quantities of vegetables—especially the leafy ones—eggs, citrus fruits, and meat (all parts of the animal being eaten, even the blood); and that the Chinese diet at its best is probably more likely to be adequate than is the usual American one. To test this in a practical manner, Dr. Wang was asked to set out in the laboratory amounts of the different foods that a person might, on the average, consume in one day, just as has been done with other dietaries. Such a list is given in table 6, together with its food value. It is seen that the

amounts of eggs and leafy vegetables, in particular, are much greater than would be consumed by the usual American, also that the other foods that enter largely into the diet happen to be those—next to milk and green vegetables—which are highest in calcium. Rice, though low in calcium, does, nevertheless, furnish fair amounts when the unpolished is used, and it is also a source of vitamin B (especially the B-F portion). Such a diet is seen to measure fairly well up to our moderate standards even in calcium, and to be generously above in other constituents. If

TABLE 6

A Chinese diet (approximated)

FOOD	AMOUNT	CALORIES	PROTEIN	MINERALS			VITAMINS			LAXATIVE
				Ca	P	Fe	A	B	C	
			grams	*grams*	*grams*	*grams*				
1. Eggs	2 large	100	18	0.090	0.244	0.0040	+	+	−	−
2. Vegetables:										
Spinach	2 servings	50	4.4	0.140	0.142	0.0075	+	+	+	+
Cabbage (or other leafy)	2 servings	50	2.5	0.070	0.046	0.0017	+	+	+	+
3. Orange	2	200	3.0	0.180	0.080	0.0008	+	+	+	+
4. Apples (or similar)	2	150	1.0	0.020	0.030	0.0007	−	+	+	+
5. Meat:										
1 muscle	1 serving	100	15.0	0.009	0.162	0.0017	−	−	−	−
1 glands, or blood, etc.	1 serving	100	15.0	0.009	0.162	0.0026*	+	+	+	−
6. Soy bean	1 serving	100	12.0	0.050†	0.140†	0.0020†	?	+	?	+
7. Fat		350					?	−	−	−
8. Rice (unpolished)		1,800	45.4	0.054	1.080	0.0100	−	+	−	+
Total		3,000	116	0.622	2.09	0.031	+	+	+	+
Standard		3,000	75	0.67	1.32	0.015				

* Computed on heart.

† Minerals estimated as navy beans.

the Chinese, however, turn to refined cereals, or cut down on their consumption of vegetables, then we have an entirely different story.

The Chinese diet at its best, therefore, is an excellent illustration of the fact that an adequate diet can be secured without milk. It is even a more striking example, perhaps, of the slight probability there would be of the average American getting an adequate diet without it, unless almost every item in the diet were selected with reference to its calcium content.

We might, in similar manner, check other racial or group diets, but these are sufficient to show how this method can be used to practical

advantage in a dietary class. It is not, of course, intended to suggest that our present standards are exact or final, or that such a check-up is equal to a quantitative dietary study. It is merely meant to show that if all the foods entering into a dietary are known, and particularly if an eye witness—or better still, a native who has herself lived on the diet—can approximate the amounts of the different foods that could be assumed to be in the usual diet, then this method can be used as a teaching device to show the *probable* adequacies and deficiencies of type or individual diets. By such an attack the students gain a realization of the innumerable combinations which may make an adequate food ration; they develop a greater respect and tolerance for the diets of other nations, and are much less complacent with their own. They learn to judge food combinations on their true merits, rather than on the basis of palatability to them personally, or conformity to their particular method of insuring adequacy. In social service dietetics they learn to check the diets of the people with whom they work and to suggest only such changes as are necessary to supplement any deficiencies found, rather than trying to make all diets conform strictly to the American pattern.

This method is offered, therefore, merely as one teaching device which should help to develop greater open-mindedness and resourcefulness in our future dietitians.

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STUDIES UPON EDIBLE CELLULOSE

I. Recovery of Crude Fiber from Raw and Cooked Potato Cellulose*

SYBIL WOODRUFF and ELMA F. MILLER

Whether cellulose of edible plant parts is identical with that used for industrial purposes is a question which gives purpose to this series of studies. An extensive study of the chemistry of the cellulose of wood (1), cotton (2), ramie (3), and flax (4) has not yielded any indication that the cellulose of one origin differs chemically from that of another. However, the literature does not reveal that any investigations of this kind have been made upon the cellulose contained in the fruits and vegetables which constitute an important part of the human dietary. Because it is unsafe to assume chemical identity of food cellulose with that of industrial sources, work is now in progress, the purpose of which is a study of the chemical nature of the cellulose of edible plants.

This paper is a report of a study made to determine whether the cooking of edible cellulose influences its disappearance from the intestinal tract where its dietetic function is assumed to reside. Nothing is known definitely as to whether cellulose-containing foods are equally laxative when fed in the raw and in the cooked states. It was proposed, therefore, to compare the amounts of crude fiber which can be recovered in the feces of rats fed upon diets of known crude fiber composition when the same cellulose material was fed cooked and uncooked.

Crude fiber is the only index at present available of the cellulose content of food materials. Crude fiber analyses may represent non-cellulose substances which are undigested by the routine procedure employed; or it is equally possible that some cellulose may disappear during the interval of hydrolysis. The early analyses of food materials by Atwater and Bryant (5) have been supplemented by occasional ones of other workers and by a rather extensive analysis of the crude fiber content of fruit by Magers (6). The shortcomings of the routine analysis for crude fiber have been discussed by Bidwell and Bopst (7), who have suggested modi-

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fications which will insure greater uniformity of results. The method recommended by the latter was employed in the analyses reported here.

EXPERIMENTAL

Potato cellulose was used in the experimental work because of the comparative ease of obtaining fibrous material which could be added to simplified diets. It was prepared by grating raw, pared potatoes and washing the fibrous residue in cold water until no more starch was removed. There was admittedly a small amount of starch enclosed by the fiber even after thorough washing. The shreds of fiber were pulled apart to prevent matting, as they dried in the air at room temperature; a brief drying at 100° brought the weight to a constant value. Analyses for crude fiber were made upon this dried fiber, upon the wet fiber freed from surface moisture, and also upon raw potato. The analytical results of table 1 show that a surprisingly small amount of crude fiber was found in the coarse fiber separated from the potato. This seems to indicate either that the analytical method for crude fiber does disintegrate true cellulose, or that the framework of edible plants owes much of its rigidity to hemicelluloses and other substances. Further studies upon the chemical nature of this potato fiber are now in progress.

TABLE 1

Per cent of "crude fiber" in potato and potato fiber

	ANALYSIS 1	ANALYSIS 2	ANALYSIS 3	AVERAGE
Potato, edible portion	0.35	0.48	0.43	0.42*
Potato fiber, moist	1.318	1.334	1.288	1.313
Potato fiber, dried	5.579	5.438	5.563	5.530

* The average crude fiber content of the edible portion of potato is given by the United States Department of Agriculture, Bulletin 28, to be 0.4 per cent.

Diets of two general kinds were fed for 7-day intervals to 2 groups each of 4 to 6 adult male rats which were housed in false-bottomed, wire cages. The 7-day period was preceded by a 2-day feeding during which time no collections were made. The feces, marked for the feeding interval by carmine, were collected twice daily and weighed both moist and dry. They were ground to a 40-mesh size for crude fiber analysis.

Series I. In the first feeding régime, a basal diet consisting of potato starch, dried whole milk powder, casein, butter-fat, and salt mixture was made up to have this composition: carbohydrate 60 per cent, protein 18.5 per cent, fat 15.8 per cent, and ash 5 per cent. Each 100 grams of this

diet contained 41 grams of starch. To 100 grams of the mixture was added 20 grams of dried potato fiber and 100 to 150 grams of water. This amount of fiber was used because it was approximately the amount present in such a quantity of potato as would contain 41 grams of starch. In one feeding interval of this series the raw fiber was only softened in the cold water before it was incorporated in the diet. The fiber of diet Ic (table 2) was cooked in water over a steam bath for one-half hour.

TABLE 2

Per cent of crude fiber recovered in feces

SERIES	DESCRIPTION OF DIET	FEEDING INTERVAL		
		1	2	Average
Ia	Raw potato starch; raw potato fiber	58.3	57.8	58.0
Ib	Cooked potato starch; raw potato fiber	58.0	52.2	55.1
Ic	Raw potato starch; cooked potato fiber*	47.8	33.1	40.4
IIa	Raw potato	83.7	80.8	82.3
IIb	Baked potato	62.2	60.7	61.5

* Agreement was very poor but it indicated the possibility of a more variable behavior of the intestinal tract toward cooked fiber.

TABLE 3

Average results of feeding experiments with potato cellulose (7-day intervals)

	Ia RAW STARCH, RAW FIBER	Ib COOKED STARCH, RAW FIBER	Ic RAW STARCH, COOKED FIBER	IIa RAW POTATO	IIb BAKED POTATO
Crude fiber in ration, grams	0.663	0.978	0.967	0.368	0.779
Total moist feces, grams	18.5	26.1	29.3	17.5	12.2
Total dry feces, grams	6.96	13.00	10.30	7.67	8.79
Crude fiber in feces, (corrected), grams	0.385	0.539	0.382	0.303	0.479
Crude fiber recovered, per cent	58.0	55.1	40.4	82.3	61.5

Series II. In this series the potato starch was omitted from the diet previously described and an amount of potato, 223 grams, which contained 41 grams of starch, was substituted. This potato likewise furnished all the fiber fed in this series. In diet IIa (table 2) grated raw potato was used, in which case the diet was more than sufficiently moistened by the water of the potato. Diet IIb (table 2) contained potato which had previously been baked until tender; this diet required some additional

moistening. The amount of crude fiber per unit of dry weight was approximately the same in the potato diets of Series II and in the simplified diets of Series I.

All of these rations were fed *ad libitum*, and the food intakes by the rats were recorded for the 7-day intervals. The crude fiber intake was not the same on the different diets because of variability of appetite. A preliminary feeding upon a fiber-free basal ration indicated that a small amount of recoverable material appeared in the feces even when no recognized crude fiber was fed. This averaged 0.31 per cent of the weight of the dry fecal material and correction was made for its presence in calculating the crude fiber recovered from Series I and II.

The per cent of crude fiber recovered in the feces from the various diets is given for duplicate feeding intervals in table 2. The average results per rat for the two series will be found in table 3.

These results indicate that the crude fiber best resisted the action of the digestive processes when it was fed in the raw state. The level of recovery of crude fiber in the feces was higher for raw and baked potato, 82.3 and 61.5 per cent respectively, than it was for the simplified diets containing raw and cooked fiber where 58.0 and 40.4 per cent of the fiber was found in the feces. The differences within the two series were of the same general order, however, favoring the disappearance of cooked cellulose. It made no marked difference in fiber recovery whether the starch of the basal diet was fed raw or cooked, though a greater food intake and a greater dry weight of feces resulted from the feeding of the cooked starch.

Whether the physical state of the fiber, removed from the potato and shredded, permitted of better action by the digestive juices than was possible when potato itself was eaten, or whether there are other factors which account for the smaller disappearance of fiber of the potato diets is not known.

All of the diets of Series I and II passed through the rats' intestinal tracts in 24 to 36 hours less time than did the simplified ration to which no fiber had been added. The amounts of fiber in these diets were probably generous and were also high in comparison with an ordinary human dietary. At such a high level of fiber intake they were laxative to the rats even in the case where only 40 per cent of the ingested fiber was recovered in the feces. It is possible that on a smaller margin of feeding a greater diminution would be observed in the laxative properties if so much as 60 per cent of the crude fiber disappeared during digestion.

SUMMARY

The effect of cooking upon edible plant cellulose has been studied by observing the amounts of crude fiber which can be recovered from the feces of adult rats fed upon diets of raw and baked potato and of raw and cooked potato fiber added to simplified food mixtures.

A greater laxative effect of uncooked cellulose is indicated by the fact that the crude fiber is recovered in the feces in greater amounts when it is fed uncooked than when it is fed cooked. The level of recovery is higher in potato diets than it is upon simplified diets containing potato fiber.

The coarse fiber of potato is shown to contain 5.53 per cent of "crude fiber" which suggests that the cellulose of tender plants is noticeably disintegrated by the procedure of determining crude fiber.

Studies are now in progress upon the chemical nature of the cellulose of potato fiber.

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VITAMIN C CONTENT OF JAPAN GREEN TEA*

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The recent extensive advertising by the American Japanese Tea Committee on the vitamin C content of pan-fired green tea aroused our interest about a year ago, at which time we conducted a short experiment to test the validity of their claim. Off hand it seemed improbable that vitamin C would resist the drying to which tea leaves are subjected. A test on a good grade of Japan green tea gave no indication of any vitamin C in the infusion made according to their directions. A short note to this effect was published (1).

In response to this note a letter from the American Japanese Tea Committee brought up certain questions in regard to our experimental procedure, asking us to repeat the work done previously with samples of tea which they would furnish. Accordingly we have since conducted two series of experiments on samples of pan-fired green tea from each of the 1927 and 1928 crops.

The original work on this subject was done by Miura (2) and was repeated by Murlin, Mattill and Pratt, at the University of Rochester, at the request of the American Japanese Tea Committee.

A copy of the report from the Rochester Laboratories, upon which the original advertising was based, was furnished us by personal communication. This report is entirely similar in purport to the article on the same subject published by Murlin (3) in 1927. A final briefer report of this work by Mattill and Pratt has also been furnished us. These reports have been studied carefully and a similar procedure followed in the present investigation. Sherman's scorbutic ration containing 59 per cent whole oats, ground, instead of rolled oats and wheat bran, half and half, was used as the basal diet. The milk powder used was heated for three days on open trays, with frequent stirring. The tea infusion was prepared according to the method outlined by the previous workers, with the exception that sugar was not added because good consumption was procured without. Fresh infusions were made daily; distilled water and glass flasks were used. The infusions made would probably pass for fairly strong tea. Two grams of tea were used for 100 cc. of boiling water. Directly after adding the tea the flask was removed from the hot

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plate and was shaken several times during the succeeding five minutes. At the end of that time the liquid was strained from the leaves, which had settled to the bottom, and the volume was restored to 100 cc. Twenty-five cubic centimeters and 15 cc. portions of this infusion were fed daily to the experimental animals.

Instead of using the curative method as outlined by Murlin et al., we employed the preventive method, since a food relatively low in a vitamin will tend to prevent disease more easily than cure it. This procedure would show up a slight trace of the vitamin even if there were not enough present to effect a cure.

The ten guinea pigs used in the first experiment were fed on the scorbutic diet plus fresh greens for 25 days to bring them into good condition before starting the feeding of tea. At the end of this time one animal was allowed to remain on the scorbutic diet, one was given the basal ration plus fresh greens, four received the 1927 tea, and four the 1928 tea, as indicated in table 1.

On the second experiment a shorter preliminary period of ten days was considered sufficient, as the animals were in excellent condition when procured and showed but slight losses which are customary with a change in environment. In this group, two pigs were allowed to remain on the scorbutic ration, two received 1 and 2 cc. of California orange juice respectively and twelve received the 1927 and 1928 tea supplements as indicated in table 2.

In the latter series, a daily record was made of the amount of tea consumed and with few exceptions we obtained almost complete consumption. In the earlier series the tea was used to moisten a small portion of food which the pigs were forced to eat before other food was given. In this way we have reason to believe that nearly complete consumption of the tea was insured.

The most striking feature in the growth curves of these animals is the loss of weight and frequent deaths from scurvy in both of the tea groups. The decline was more rapid in the animals having the shorter preliminary period on greens, indicating perhaps a slight storage or carry over in the guinea pigs where greens were fed for more than three weeks. In some cases they even continued to gain for a week or ten days after the tea was substituted for greens, but the subsequent loss would indicate that the tea gave little or no protection. It is natural that some animals will be found more resistant than others to vitamin deficiencies, illustrated here by the few that survived longer than the average. There is no evidence, however, that the tea is in any measure responsible for this difference, since those consuming the larger amounts showed no

TABLE 1

GUINEA PIG NUMBER	SUPPLEMENT FED DAILY	SURVIVAL PERIOD	CHANGE IN WEIGHT DURING EXPERIMENT PERIOD	AUTOPSY FINDINGS OR FINAL CONDITION
		days	*grams*	
100	Greens	52+	+114	Normal
101		17	−87	Scurvy
102	15 cc. 1927 tea	27	−149	Severe scurvy
103	15 cc. 1927 tea	31+	−80	Record missing
104	25 cc. 1927 tea	19	−115	Scurvy
105	25 cc. 1927 tea	31	−148	Scurvy
106	15 cc. 1928 tea	17	−137	Scurvy
108	15 cc. 1928 tea	28	−110	Scurvy
109	25 cc. 1928 tea	18	−134	Severe scurvy
111	25 cc. 1928 tea	19	−34	Scurvy

TABLE 2

GUINEA PIG NUMBER	SUPPLEMENT FED DAILY	SURVIVAL PERIOD	CHANGE IN WEIGHT DURING EXPERIMENT PERIOD	AUTOPSY FINDINGS OR FINAL CONDITION
		days	*grams*	
124		11	−167	Severe scurvy
125		11	−182	Mild scurvy
126	1 cc. orange juice	45+	+80	Normal
127	2 cc. orange juice	45+	+121	Normal
112	15 cc. 1927 tea	32+	+54	Severe scurvy
113	14 cc. 1927 tea	18	−98	Severe scurvy
114	14 cc. 1927 tea	21	−101	Very severe scurvy
115	18 cc. 1927 tea	17	−143	Very severe scurvy
116	21 cc. 1927 tea	18	−118	Severe scurvy
117	12 cc. 1927 tea	13	−119	Scurvy
118	15 cc. 1928 tea	24	−136	Scurvy
119	15 cc. 1928 tea	10		Scurvy and lung infection
120	14 cc. 1928 tea	32+	−90	Severe scurvy
121	23 cc. 1928 tea	32+	+2	Doubtful
122	22 cc. 1928 tea	22	−92	Mild scurvy
123	21 cc. 1928 tea	19	−84	Severe scurvy

Low vitamin C basal ration

	per cent
Whole oats (ground)	59
Milk powder (heated)	30
Butter fat	10
Table salt	1
	100

greater protection than those on smaller amounts. On the other hand, the control animals receiving greens or the small amounts of orange juice showed complete protection from scurvy and steady gain in body weight after the slight initial loss already noted. It is interesting to note that the guinea pigs are always greedy for their greens or orange juice but have to be more or less forced to take tea. This in itself may be an indication of low vitamin C content as it is usual for an animal to crave the food which will supply the missing factor.

DISCUSSION

There is always a chance for criticism of conclusions drawn where an inadequate number of animals is used, or where the work is not properly controlled. In the previous work, both of these criticisms are valid since but one series of experiments is reported and but six guinea pigs were fed on the pan-fired green tea. Furthermore, there is no record of any animals being fed on a known source of vitamin C such as fresh greens or orange juice as a control. Yet, they make the statement that "15 cc. of a 2 per cent infusion of pan-fired green tea is not far from the equivalent of 1.5 cc. of orange juice or 2 cc. of lemon juice." In the present series ten guinea pigs have been used for each of the 1927 and 1928 samples of tea and the two animals on orange juice and one on greens demonstrate complete protection from scurvy.

It is also quite gratifying that we encountered very little irrelevant disease in these two groups of animals. Previous to the earlier experiment reported here it was necessary for us to discard one whole group because of a general unhealthy condition. In the Rochester work, however, considerable lung and kidney disease is reported, which interfered greatly with final outcome and with a fair interpretation of their results.

CONCLUSIONS

The results of the experiments reported herein lead us to conclude that there is no demonstrable amount of vitamin C in green tea. In view of the current advertising of Japan green tea, it is recommended that commercial advertisers make sure that the experiments upon which they are basing their statements are scientifically accurate and that their advertising text does not permit of a wrong interpretation by the public.

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DIETARY TREATMENT OF EPILEPSY*

BEATRICE CLAP, M.A., AND MARTHA KOEHNE, PH.D.

There have been many efforts in the past to prevent epileptic convulsions through regulation of diet. The types of diet recommended varied with the ideas of members of the medical profession concerning the cause of the convulsions. The following is a brief review of those theories that bore a direct relationship to diet, with a short discussion of the dietary treatments advocated.

Putzel (1880) advised eliminating tea, coffee and other sources of purines, as well as alcohol, from the diet. With Haig (1896), he believed that epilepsy was caused by high blood pressure which interfered with circulation to the brain. Excess uric acid in the blood was said to cause the high blood pressure. Putzel also advocated restricting the kind and amount of protein in the diet.

Many physicians have prescribed diets low in protein as a preventive measure. Some have believed that the harmful effect of a liberal protein diet lay in the specific dynamic power of protein (Peterman 1927); others, that the convulsions were caused by absorption of products of putrefaction of protein (Kellogg, 1923, Carter, Howe and Mason, 1921). Very frequently these low protein diets provided insufficient calories and too poor a quality of protein for the maintenance of nitrogen equilibrium in adults, or for growth in children.

Salt is another constituent of food that has been looked upon with suspicion. Mirallie (1919) reported having had 160 epileptic patients on a salt-poor diet for five years and stated that the seizures did not reappear in 60 per cent of the cases. Powers (1920) claimed that a salt-poor diet rendered the food less palatable and therefore lessened the temptation to bolt food or to eat it in excess, and hence should be prescribed. Peterman (1926 C) advocated not over 5 to 6 grams total sodium chloride per day.

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Constipation has been regarded as responsible in part, at least, for recurrence of seizures in epileptics. Anticonstipating diets have been freely recommended by many physicians.

Weeks and his colleagues (1923) experimented with the following types of diets: 1. High protein—low fat (260 grams protein and 30 grams fat). 2. High carbohydrate (500 to 800 grams). 3. High fat diet (260 to 400 grams fat). 4. High caloric diet (up to 8000). He found that none of these diets brought about any increase or decrease in the number or frequency of seizures.

McMurray (1916) reported successful results on a starch and sugar-free diet.

The lack of uniformity in results, obtained after endless trials with different types of diet, convinced many that food itself had no specific causative or inhibitive effect in epilepsy, and that common sense and consideration of food preferences of the patient must be practiced. Those taking this stand felt that only simple bland foods, following lacto-vegetarian principles, should be eaten, emphasizing that disturbances in digestion must be avoided (McLester 1927).

Until very recently, in most colonies of epileptics no one type of diet was followed. Epileptics were found to respond, as do most non-epileptics, to various dietary régimes. Each patient was examined and his food habits studied before prescribing what he should have to eat.

RECENT LABORATORY FINDINGS

Although the metabolism of an epileptic is in all probability normal between attacks, yet it has been suggested by Peterman (1925) that a metabolism disorder of some kind may be responsible for an epileptic showing such characteristics as an inordinate appetite, for instance, accompanied by unexpected food reactions, chronic constipation, and above all, the abnormalities in the hydrogen ion content of the blood.

The hydrogen ion concentration of the blood in thirty-eight epileptics was determined by Geyelin (1923) in comparison with that of twenty-eight normal individuals. The results showed a wider range (7.25 to 7.50) of blood reaction with the epileptic. Samples of blood taken just before convulsions in epileptics have indicated a hyperalkalinity (above 7.4 normal upper level) and samples of blood after convulsions have indicated hypoalkalinity, as shown by Geyelin (1928). Saunders (1928) tested the pH of saliva by a most careful and detailed procedure. The results obtained revealed that epileptics with frequent convulsions showed a marked fluctuation in hydrogen ion concentration, while

patients with few convulsions showed very slight or no fluctuation. Gamble and Hamilton (1927) discovered a greatly increased excretion of total acid and total fixed base in the urine during periods of seizures.

A change in the calcium content of the blood has been observed and explained as secondary to the changes in its hydrogen ion concentration by Klein and Forcione (1927). However, they failed to get satisfactory clinical improvement from the use of calcium therapy; gluco-calcium had no advantage over calcium chloride.

Robinson and co-workers have concluded that the low blood cholesterol found in epileptics must be the result of the muscular exercise of convulsions. In normal persons the cholesterol value rapidly returns to the original level (140 to 180 milligrams per 100 cubic centimeters), after a sudden drop, but in an epileptic it remains low for long periods of time.

Talbot and his colleagues at Massachusetts General Hospital (1924) found that the basal metabolism was normal or slightly raised in all cases of idiopathic epilepsy, and this report was confirmed by the findings of Barach and Draper (1925). Boothby and Sandiford (1922) reported the basal metabolism within normal limits in 83 per cent of a series of 24 cases of epilepsy studied.

On the basis of these recent laboratory findings, speculations as to the cause of epilepsy have been directed to the following probable factors:

Statistics are beginning to reveal the fact that a rather high percentage of epileptics show either a personal or a family history of protein sensitiveness in some one or more of its various manifestations (Spangler 1927, Spratling 1904, Ward and Patterson 1927, Howell 1924). Could it be a form of allergy that, in a somewhat hyperalkaline blood, produces irritation of the nerve endings, a sort of "hives of the brain" (Geyelin 1928), which has no effect on the nerves when the blood is slightly low in alkalinity?

Is it possible that the metabolism of an epileptic varies sufficiently from that of a normal person, as to produce foreign substances that irritate the nerves? Is this irritant merely a hyperalkalinity of the blood?

Again, the fault may be a failure of the liver to detoxicate certain elements of food or metabolism which are ordinarily rendered harmless. Efforts are being made to isolate such a toxic substance from the intestines of epileptics (Geyelin 1928). If such a substance exists, does it act as an irritant to the nerves only when the blood is too alkaline?

As a result of research work in the above fields it was thought that beneficial results might be secured if a method could be devised for pre-

venting hyperalkalinity of the blood of epileptics. Convulsions appear when the alkalinity approaches 7.5 and cease when the hydrogen ion concentration approaches 7.25.

Since ketosis brings about a prompt lowering of the alkalinity of the blood, efforts were directed to its production in epileptics. It is well established that ketosis is frequently produced by fasting, and that it can be produced whenever the ketogenic factors in the diet or metabolism greatly exceed the antiketogenic.

THE PRODUCTION OF KETOSIS IN EPILEPTICS BY FASTING

Fasting has often been observed to produce ketosis in obese persons. As a means of preventing epileptic attacks it was first advocated by Guelpa and Marie (1911). Geyelin (1921) first realized the benefits of fasting in the treatment of epilepsy when he observed in 1919 that a severely epileptic child of a friend of his suffered no further attacks after four different fasting periods, over a duration of several months. He then studied twenty-six cases after fasts of twenty days each, and reported that only four out of the twenty-six showed epileptic seizures after the tenth day of the fast. Geyelin (1928) stated that as many as ninety per cent of his patients have ceased having convulsions during periods of starvation. Starvation has its limitations, however, because of the restricted periods of time it can be maintained.

Fasting produces ketosis with lowering of the pH of the blood and its carbon dioxide combining power. It causes an increase in blood uric acid and decreases somewhat the blood sugar. These chemical changes have been studied by Lennox (1923, 1924, 1927), and Lennox and Cobb (1928). Lennox concluded, as a result of his uric acid findings, that increase in blood uric acid was not a cause of convulsions (as believed earlier by Putzel, Haig, and others), for starvation prevented convulsions at the same time that it brought about the higher concentration of uric acid in the blood.

In a gastric analysis by the fractional method, Felson (1924) discovered, in twenty-six per cent of his epileptics, an almost complete achlorhydria in the fasting samples of juice collected over periods of two hours. Geyelin (1928) experimented upon a patient by administering dilute hydrochloric acid by mouth. No striking results were secured and, because the patient began to show some characteristic symptoms of hypersecretion, the treatment was stopped.

Weeks and his co-workers (1923) placed little confidence in fasting as a treatment for epilepsy; his patients had as many recurrent attacks

after fasting as before. He says "Diminution of attacks . . . . was a purely accidental phenomenon such as could easily be produced by a variety of psychic and other influences." Talbot, Metcalf and Moriarty (1927b), however, have secured excellent results by its use and believe with Geyelin that its beneficial effects are due to the ketosis produced.

An excellent summary of fasting as a treatment for epilepsy is found in an editorial in the *Journal of the American Medical Association*, Vol. 91, page 1550 (1928).

THE KETOGENIC DIET

The great strides made today in the treatment of epilepsy are due to the use of the ketogenic diet proposed by Geyelin (1921), and by Wilder (1921). Wilder believed that the acetone bodies (aceto-acetic acid, beta-oxybutyric acid, and acetone) present in the blood because of the incomplete oxidation of the fatty acids in the diet, were directly responsible. He stated "Aceto-acetic acid probably acts as an anaesthetic and reduces the reactivity of the nerve cell, and in some way suppresses the attacks as chloroform is known to do." This is a very interesting and plausible explanation, but Geyelin and others are inclined to regard the beneficial effect of ketonemia as due to reduction in the pH of the blood.

There is no doubt about the ketogenic diet being more effective than fasting and more practical, since it can be continued longer. According to Talbot and co-workers (1927 b), Geyelin (1928), Peterman (1927 and 1928) and others, the production of ketonemia by diet gives the greatest promise to the epileptic of any treatment yet proposed.

Results of the first two and one-half years use of this diet in the Mayo Clinic were reported by Peterman (1925). Thirty-seven patients, whose average age was eight and six-tenths years, were observed for periods of from four months to two and one-half years. Seven of the patients had *grand mal*, seventeen had *petit mal*, and thirteen both *grand* and *petit mal*. There was not one with evident organic disease or one who showed mental deterioration, but nineteen of them showed hereditary tendencies; ten, migraine; three, nervousness; and three, syphilis. The average duration of symptoms in all had been 2.3 years. The encouraging results of this experiment with the ketogenic diet were that, of the thirty-seven patients, nineteen have been entirely freed from attacks; eight of these nineteen for one to two and a half years and the other eleven for three months to one year. Thirteen were definitely improved and only one showed no improvement.

The diet is preceded first by approximately a week of fasting, the patients being allowed only water, broth, bran wafers and eight ounces of orange juice daily. Then the individual prescriptions are begun. Twenty to thirty per cent additional calories were given to children for growth and energy, while the total calories approximated seventy-seven calories per kilogram of body weight, or thirty calories per pound. Peterman advises maintaining the normal weight for each patient, according to his age and height, and not feeding overweight persons above their basal food requirement until the weight is nearly normal.

The individual is put on a prescription ranging from ten to fifteen grams of carbohydrate, one gram of protein per kilogram of body weight and fat enough to supply the remainder of the caloric requirement. Peterman puts children under five years of age on twenty grams of carbohydrate and one gram of protein per kilogram of body weight (McLester, 1927, quotes one to two grams) and children over five years, on fifteen to twenty grams of carbohydrate and two-thirds gram of protein per kilogram of body weight. The carbohydrate allowance must not go below ten grams a day for any patient over a long period of time, but the fat may be increased to any amount that can be tolerated, and which may be necessary to produce ketosis. Vitamins and mineral salts should be supplied, and water given freely. Salt to season is permitted. A high fat diet prescribed for a child is likely to cause constipation and the use of mineral oil is therefore advised.

Ladd and Palmer (1923) recommended the following simple formula to be followed in planning a diet that usually produces ketosis: (100 per cent carbohydrate of diet plus 58 per cent protein eaten): 100 per cent fat in food :: 1:4. Employing this method of calculation, Geyelin always uses at least a ratio AK : K of 1:4; but occasionally with young people he has had to prescribe a ratio of 1:8 or even 1:10, or more, before producing beginning ketonemia and ketonuria with the accompanying beneficial results.

With appearance of ketosis, attacks will decrease or stop altogether, as a rule. Peterman (1926 a) observed on the third day that the blood sugar progressively decreased to a lower level for ten to fourteen days (normal amount is eighty to one hundred-twenty milligrams per 100 cubic centimeters) and that the carbon dioxide combining power of the blood decreased slightly, but not below the lower limits of normal percentage. The urine became more acid and on the first day after a very high fat diet gave a faint trace of acetone and diacetic acid which appeared in larger amounts after the third day. In the blood, acetone

appeared on the third day and increased at varying rates (normal amount of ketone bodies is zero to four milligrams per 100 cubic centimeters). Lipemia was often decreased and no increase in blood fat was apparent. Calcium, phosphorus and chloride showed little variation.

During the first few days of this diet there is a tendency to nausea, which a glass of orange juice will relieve. When the convulsive attacks are under control, the diet should still be continued for three months, even through ordinary illness. If there have been no further attacks for about three months, the carbohydrate may be gradually increased ten grams at a time, and when it reaches fifty grams, the fat can be reduced fifteen to twenty grams at a time. During the next six months, the carbohydrate may be increased ten grams every other month, alternating with five grams of protein. The fat may be decreased every three or four months in proportion, although there is no definite rule except that it should not be decreased until the patient maintains his body weight.

An examination of the patients after the diet had been in use showed perfectly normal physical development with a normal rate of basal metabolism. (Peterman, 1925). The patients appeared to be less irritable, and more alert and full of interest, besides gaining sleep. A second period of fasting is sometimes required before the number of attacks will cease. If the urine does not continuously show a diacetic acid reaction, or if the fat shows gray in the stools, it is an indication that the fat is not being absorbed properly and the patient must be put on another fast. If nausea and diarrhea result, a fast may be necessary as often as once a week.

When Helmholz (1927) used the ketogenic diet with cases of both symptomatic and idiopathic epilepsy, he cured fewer cases of the symptomatic type. Fifty-four per cent of the idiopathic type were "cured" and his experience indicated that the ketogenic diet would free thirty-one per cent from attacks and definitely improve an additional twenty-three per cent. Helmholz rated as failures those cases where there was no apparent improvement after two months or more of the ketogenic diet, without the addition of medicine.

There are still epileptics who find no improvement with the high fat diet. Weeks and his co-workers (1923) were unconvinced of its value, due to unsuccessful results with a diet of 5–20–580, with calories up to 5,365, given to a group of adults. Possibly their patients did not show a sufficient degree of ketosis or did not receive individual prescriptions. All were mentally degenerated and it is not to be expected that degenerative processes will be influenced by the diet. Weeks has said that all

epileptics tend to improve after any new treatment, and time has yet to show the permanent value of the ketogenic diet.

Achard (1928), interested particularly in the endocrine theory, says "Each attack increases a patient's predisposition to further seizures but ketosis is not sufficient to overcome this tendency, and thus the clinical problem is to find not so much the effective treatment for an epileptic attack but rather a treatment for the epileptic patient."

The percentage of "cures" before the use of the ketogenic diet was quoted by Geyelin (1928) as less than two per cent. The term "intestinal epilepsy" has been suggested for the curable type. In estimating the percentage of cures, a definition must be given; Turner (1914) stated that a case can be generally considered "cured" after there has been an arrest of seizures from two to ten years or more. Epileptic attacks, however, will often reappear after a period of several years.

PRACTICAL ADMINISTRATION OF THE KETOGENIC DIET

One of the great disadvantages of the ketogenic diet is the possibility of gastro-intestinal trouble. Much depends on the individual and on the nature of the fat eaten. Those fats which melt at the temperature of the body are more easily digested although the degree of digestibility will vary according to the method of preparation. As a preventive of fat indigestion, one must masticate well, exercise the abdominal muscles and use mild laxatives, if necessary. Undigested fats will irritate the mucosa of the colon and may cause colitis. It is said by many that high fat diets, in elderly adults particularly, may cause lipins to be stored in the blood vessels and hence lead to arteriosclerosis (Joslin, 1928).

Another disadvantage of the ketogenic diet is the prolonged period of time that is required before a normal diet may again be resumed with safety. Many find the high-fat diet extremely unpalatable, and where nausea ensues fats should not be forced.

The question of economy must be dealt with in many families. Larger quantities of dairy products and fatty meats will incur an expense that can not be met month after month. In such cases, the importance of the diet must be stressed most vigorously, for otherwise it may soon be placed subordinate in importance to other family expenses.

The matter of close supervision over the food of the patient is an important point. Certain foods may not agree and should be quickly eliminated. It is not difficult to discover when rich carbohydrate foods, not allowed in the diet, are eaten by the patient, since the immediate reaction will undoubtedly be evidenced by a recurrence of seizures.

Qualitative acetone and diacetic acid tests of the urine and acetone breath are indices that the diet is being followed.

Recent advances in the diet therapy of epilepsy have increased the importance of the dietitian as a factor in the success of the treatment. After a patient has been under observation at a clinic, it is necessary to teach the parent, guardian, or the patient himself, the use of the high fat diet and its purpose. The diet is difficult to carry out because of its monotony and unpalatability, and unless the person concerned is able to see results, he will not be likely to continue with it. Geyelin (1928) strongly advises that the dietitian visit the home and accustom herself to its surroundings before she becomes too dogmatic with her instructions. If this is not possible, correspondence or office interviews will have to be depended upon.

Proper initial instruction is best given by the use of the gram scale; later on, measuring utensils may be substituted. Each diet prescribed must be adapted to the individual. He can be taught to calculate food values from any good diabetic primer, although precautions are first taken by giving the patient a definite diet from which he can make slight variations. With more accurate knowledge of food values he will be able to calculate his own diet. The length of time required before the patient is able to figure his own diet intelligently varies. At the Mayo Clinic, and elsewhere, classes of epileptics are formed, in which the general principles of the diet are first outlined, and then illustrated by sample menus.

The food should be distributed as evenly as possible, the total number of grams for the day being apportioned equally for the three meals. McQuarrie and Keith (1927) studied the variations in the rate of excretion of the acetone bodies in epileptic children throughout the day, and on three equal meals at five hour intervals, found the following variations in the intensity of ketonemia: the highest in late afternoon, the lowest between three and nine-thirty o'clock in the morning. Therefore, it is obvious that the diet must be so adjusted that the lowest level of ketosis for the day will be well above the threshold at which the seizures are likely to occur.

The diet should also be adjusted with regard to its total caloric value, mineral and vitamin content, degree of digestibility and taste. The first requirement, caloric value, will in all probability be well taken care of, since fat gives two and one-fourth as many calories to a gram as either carbohydrate or protein. The protein factor is adjusted in the prescription. The next consideration must be given to the mineral

elements, particularly iron, calcium and phosphorus, and to the vitamins. Because of the carbohydrate restrictions, it is difficult to give a sufficient amount of vegetables, fruit or milk to meet the calcium, phosphorus and iron requirement. This may also be true of the water soluble vitamins B and C. No breads or cereals can be allowed, and on a very limited carbohydrate diet, only 3 to 5 per cent vegetables and 10 per cent fruits may be given in restricted amounts. The high fat is supplied by fatty meats, cream, eggs, butter and oils. Washed bran wafers are given as fillers as they possess no nutritive value.

Following are detailed calculations of five different prescriptions for ketogenic diets that have been adjusted as satisfactorily as possible, without the aid of definite supplements, in an effort to meet all the nutritional needs. These diets were selected from some used at the Presbyterian Hospital, New York, and at the Mayo Clinic.

NUMBER 1

	AMOUNT	CHO	P.	F.	Ca.	P.	Fe.
Breakfast:							
Orange	40	5.1	0.3	0.2	0.018	0.008	0.00008
Bacon	30		3.2	19.4	0.002	0.034	0.00048
Egg	100		13.4	10.5	0.067	0.180	0.0030
Butter	20		0.2	17.0			
Cream	60	1.5	1.3	24.0	0.052	0.040	0.0001
Agar							
Bran wafers							
Lunch:							
Chop, A.P	60		11.0	16.0	0.007	0.122	0.00169
Cauliflower	80	3.1	1.0	0.2	0.098	0.049	0.00048
Butter	30		0.3	25.5			
Pineapple mousse:							
Cream	80	2.4	1.8	32.0	0.069	0.054	0.00016
Pineapple	30	2.6	0.1	0.1	0.005	0.008	0.00015
Supper:							
Egg	50		6.7	5.3	0.034	0.090	0.00150
Cheese	25	0.1	7.2	9.0	0.233	0.170	0.00032
Lettuce	30	1.2	0.4	0.1	0.013	0.013	0.00021
Tomato	50	2.0	0.7	0.2	0.005	0.013	0.00020
Mayonnaise	20			16.0			
Cream	90	2.7	2.0	36.0	0.077	0.060	0.00018
Butter	10		0.1	8.5			
Agar							
Total		21.0	29.7	220.0	0.680	0.841	0.00855

NUMBER 2

	AMOUNT	CHO	P.	F.	Ca.	P.	Fe.
Breakfast:							
Grapefruit	30	2.6	0.1	0.1	0.006	0.006	0.00009
Bacon	30		3.2	19.4	0.002	0.034	0.00048
Egg	100		13.4	10.5	0.067	0.180	0.00300
Butter	15		0.2	12.8			
Cream	90	2.7	2.0	36.0	0.077	0.060	0.00018
Lunch:							
Egg	50		6.7	5.3	0.034	0.090	0.00150
Salad:							
Lettuce	20	0.8	0.3	0.1	0.009	0.008	0.00014
Cabbage	30	1.2	0.4	0.1	0.014	0.009	0.00033
Celery	30	1.2	0.4	0.1	0.023	0.011	0.00015
Mayonnaise	40			22.0			
Butter	25		0.3	21.3			
Cream	40	1.2	0.9	10.0	0.034	0.027	0.00008
Strawberries	30	2.6	0.1	0.1	0.012	0.008	0.00024
Cream	100	2.0	2.2	40.0	0.086	0.067	0.00020
Supper:							
Chop A.P.	60		11.0	16.0	0.007	0.122	0.00169
Asparagus	80	3.1	1.0	0.2	0.020	0.031	0.00030
Butter	25		0.2	21.3			
Cream	50	1.5	1.1	20.0	0.042	0.034	0.00010
Custard:							
Egg	50		6.7	5.3	0.034	0.090	0.00150
Cream	60	1.8	1.3	24.0	0.052	0.040	0.00012
Water							
Sum Total		20.7	51.5	280.6	0.519	0.817	0.00810
Sherman (1926)				Adult 0.67 Child 1.00		1.32	0.015

NUMBER 3

	AMOUNT	CHO	P.	F.	Ca.	P.	Fe.
Breakfast:							
Grapefruit	100	8.6	0.4	0.2	0.021	0.020	0.00030
Bacon	30		3.2	19.4	0.002	0.034	0.00048
Egg	50		6.7	5.3	0.034	0.090	0.00150
Butter	15		0.2	12.8			
Lunch:							
Beef	60		11.3	15.5	0.007	0.122	0.00169
Spinach	120	4.7	1.6	0.4	0.080	0.082	0.00432
Butter	15		0.2	12.8			
Cream	60	1.8	1.3	24.0	0.052	0.040	0.00012
Jello			4.6				
Supper:							
Lamb	60		11.2	15.5	0.007	0.122	0.00170
Cauliflower	90	3.5	1.2	0.3	0.110	0.055	0.00054
Butter	30		0.3	25.5			
Peaches	100	8.6	0.4	0.3	0.016	0.024	0.00030
Total		27.2	42.7	134.0	0.329	0.489	0.01095

NUMBER 4

	AMOUNT	CHO	P.	F.	Ca.	P.	Fe.
Breakfast:							
Grapefruit	60	5.2	0.2	0.2	0.013	0.012	0.00018
Bacon	20		2.1	13.0	0.001	0.023	0.00032
Butter	30		0.3	25.5			
Bran wafers							
Lunch:							
Broth							
Beef	40		7.6	10.3	0.004	0.082	0.00114
Carrots	25	2.2	0.5	0.1	0.014	0.012	0.00015
Beets	20	1.8	0.4	0.1	0.006	0.008	0.00012
Mayonnaise	25			20.0			
Lettuce	30	1.2	0.4	0.1	0.013	0.013	0.00021
Butter	45		0.5	38.3			
Jello			4.6				
Supper:							
Cauliflower	25	1.0	0.4	0.1	0.031	0.015	0.00015
Mayonnaise	25			20.0			
Butter	15		0.2	12.8			
Ice Cream	150	1.6	2.0	14.0	0.093	0.079	0.00001
Total		13.0	19.2	154.5	0.174	0.244	0.00227

NUMBER 5

	AMOUNT	CHO	P.	F.	Ca.	P.	Fe.
Breakfast:							
Grapefruit	25	2.1	0.1	0.1	0.005	0.005	0.00007
Egg	75		10.1	7.9	0.050	0.135	0.00225
Butter	6		0.1	4.9			
Cream	50	1.5	1.1	20.0	0.043	0.034	0.00010
Lunch:							
Broth							
Chicken	24		5.4	1.2	0.003	0.058	0.00081
Spinach	50	2.0	0.7	0.2	0.034	0.034	0.00180
Butter	5		0.1	4.3			
Cream	50	1.5	1.1	20.0	0.043	0.034	0.00010
Supper:							
Broth							
Bacon	20		2.1	13.0	0.001	0.023	0.00031
Cauliflower	50	2.0	0.7	0.2	0.062	0.031	0.00030
Butter	5		0.1	4.3			
Cream	50	1.5	1.1	20.0	0.043	0.034	0.00010
Total		10.6	22.7	96.1	0.284	0.388	0.00584

The following table is a composite showing the average amounts of different types of food that were used in these five ketogenic diets per day, and the percentages of the daily adult requirement, in the essential minerals obtained from these foods.

	AMOUNT	CALCIUM	PHOSPHORUS	IRON
	grams	*per cent*	*per cent*	*per cent*
5 per cent vegetable	130	8.0	4.0	7.0
10 per cent fruit	95	2.0	1.0	3.0
Meat	85	2.0	14.0	20.0
Egg	100	10.0	12.0	20.0
Cream	150	24.0	12.0	3.0
Butter	60	2.0	2.0	2.0
Total		48.0	45.0	55.0

These calculations are based on Sherman's (1926) estimates for the daily requirement of adults: 1.67 grams calcium, 1.32 grams phosphorus, 0.015 gram iron. His recent work indicates that children should have approximately one gram of calcium per day, which would change the proportionate amount of this constituent obtained in the diet from 48 per cent to more nearly 33 per cent, or one-third only.

SUGGESTIONS FOR INSURING THE NUTRITIONAL ADEQUACY OF THE KETOGENIC DIET

Under the best conditions of planning, ketogenic diets contain too little calcium, phosphorus, iron, and water soluble vitamins, therefore some measures should be followed to provide for these specifically.

Heliotherapy is a treatment strongly advocated in many instances, and it should be particularly advised for epileptic children since it is very beneficial in the assimilation of the minerals in the body.

An abundance of vitamin A is insured in a high fat diet which includes large quantities of butter, eggs and cream. It is the water soluble vitamins that must be especially provided for in the ketogenic diet by using those vegetables and fruits with the lowest possible carbohydrate. The five per cent vegetables and ten per cent fruits that are richest in these two vitamins include spinach, tomato, lettuce and other greens, cabbage, cucumber, rhubarb, lemon juice and orange juice. They should be used raw whenever possible or cooked for a short time only, since the vitamins B and C, particularly C, are destroyed by long time cooking. Some of the foods listed are ordinarily best when eaten raw.

Only short time cooking processes should be used for vegetables.

Fresh spinach and other greens should be washed and cooked without added water for fifteen minutes, the shortest time necessary for their palatability. Cabbage should not be cooked for such patients, for it requires a large quantity of water. The water from cooked vegetables, containing water soluble vitamins, can be used for cream soup. The same can be done with the juice of freshly opened canned tomato. A fresh tomato may be served as a salad, baked with extra butter, stewed, or broiled and served with bacon. The addition of saccharine to rhubarb, lemon juice or orange juice, of which at least two ounces a day should be used, aids in their flavor.

Cod liver oil should be used as part of the fat in the diet of children, for its vitamin D content so intimately connected with mineral assimilation. At least fifteen grams (one tablespoon) twice a day is advisable. Liver should be used twice a week, if possible.

The mineral requirement is largely obtained from fruits and vegetables. The liberal use of cheese will insure a large amount of calcium. Additional calcium and phosphorus should be given regularly, according to the physician's direction, in the form of soluble calcium phosphate, five grams daily. The doctor may also prescribe inorganic iron in the form of ferric citrate, ferric lactate and ferric albuminate, since the diets are likely to be low in iron content.

SUGGESTIONS FOR IMPROVING THE PALATIBILITY OF THE DIET

The ability of the dietitian to make the ketogenic diet interesting and palatable, and hence successful, depends to a large extent upon her faculties of resourcefulness and originality. That a decrease in the frequency of the seizures will be the inevitable outcome of a successfully administered diet is assumed, but good results will not follow if the food is not eaten. A ketogenic diet with its large quantities of fat is a most difficult one for a patient to be willing to continue, for it may easily grow monotonous and pall on the appetite after a week or two, since variations in the use of fat are exceedingly limited.

Certain devices may be resorted to, however, and the following are a few suggestions:

1. *Use forty per cent cream rather than ten or twenty.* This may be used in coffee, tea, cocoa made from cocoa shells, or as a beverage with water and saccharine added to it, for palatability. A frozen mousse dessert contains large amounts of cream and is very palatable. Other desserts may have whipped cream and walnuts added to them. Vegetables may be served with

cream; soups may be made from concentrated vegetable juices and cream, and cream may be used in desserts such as custards, using saccharine to sweeten. Cream cheese and American cheese are desirable for their mineral content as well as fat.

2. *Use butter in large amounts.* Butter may be added to clear broths, meats, vegetables and desserts. Peanut butter is well liked and cheese creamed with butter. In fact, to disguise the use of large quantities of butter is not difficult.

3. *Use egg yolk* for garnish or in cooking.

4. *Use oils* in mayonnaise and for seasoning.

5. *Use fatty meats, fish,* such as trout, canned salmon, and sardines. Some steaks or chops may be used, with butter sauce added.

6. *Use bacon fat* or butter for scrambling eggs.

7. *Thrice cooked vegetables* may be used as fillers, but these cannot be depended upon for their water-soluble vitamin content or for all of their natural mineral salts.

8. *D-zerta—a diabetic gelatin, or agar jelly,* served with whipped cream, will lend variety to the menu although the food value is negligible.

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EDITORIAL

Tourist Conductor and Cordon Bleu

The friendly services of diplomatically minded Americans in promoting amicable relations with Europeans has undoubtedly received a recent set-back. The manager of a student tourist agency, rushing in where scientists might fear to tread, has despatched a letter to European hotel keepers urging them to reconstruct their table d'hôte menus to meet the demands of American tourists. The well-meaning writer of the letter kindly explains to the benighted hotel managers that America has made great advances in the science of dietetics and the chemistry of food, while Europe has been at a comparative standstill. The principal suggestions he makes are: "Do not serve veal so often. Use fresh vegetables, fruit, butter, eggs and milk. Offer, in place of meat or fish, a choice of vegetable combinations. Serve only ripe fruit and vegetables. Serve butter at all meals. Offer choice of lemon instead of vinegar in salad dressing. Serve whole wheat, graham, rye or other dark breads as well as white bread. Have plenty of fresh, cooled drinking water on the table." He goes on tactfully to say that American travellers in Europe often find themselves indisposed owing to indigestion as a result of food set before them on European tables. One infers that this condition is non-existent *chez les Américains*.

Generally speaking, a tourist, no matter of what nationality, appears in his most unattractive guise when out of his accustomed habitat. His charms are not enhanced in strange countries by demands for his native foods and braggings of his native plumbing.

Fortunately, the Americanization of European food customs is not even remotely possible, otherwise one of the more pleasant pastimes of the sane and normal traveller, the savoring of captivating and subtly blended food combinations (a liberal education in itself) would have to be foregone.

Such conclusions as to the superiority of American food habits are not founded on a sound basis, according to Roberts in this issue of the Journal. We should "develop a greater respect and tolerance for the diets of other nations and be much less complacent with our own." Our food habits do not "warrant any feeling of superiority over other races in respect to the relative adequacy of the diets. Indeed, most of the peasant diets are far superior to our own."

The writer of the letter might well have memorized the old proverb, "Think before action that nothing foolish may result."

Science-ward Bound

The student entering college is generally informed, as he approaches each subject, that it is a "science." Unless his mentors can call it a science, they are unlikely to urge its claims upon his attention. A strictly utilitarian basis seems to be the justification of every subject. Among the more recent additions to the sciences of the world has been home economics, variously known as home engineering, practical arts and letters (a Bostonian nomenclature), household economy, and other titles which the originality of the colleges may produce.

Mr. Arturo Ratti, in the January 1929 *American Mercury*, apparently takes great pleasure in airing what may be his personal idiosyncrasies, while holding in the lime-light more conspicuous examples of some (to him, if not to others) ridiculous phases of this interminably complicated scientific phraseology and the work it represents. The question is not whether the problem of correct living is simple enough for adjustments to slip into a girl's life along with her wedding ring, but rather the fact that "home engineers," in justifying degrees in arts and sciences—even an M.A. for a thesis on practical dishwashing having been recently granted—take themselves and their courses in decoration of undergarments, fundamentals of vacuum cleaner principles, early Egyptian costume and similar edifying subjects, perhaps too seriously. Never a sign is there of tongue in cheek, as they outline minutes and seconds of efficiency, and continue research and seminar in millinery, plumbing and euthenic exhibits.

There is ample justification for training which will help the modern young woman to adapt herself more efficiently to mature requirements. It is very difficult, however, to construct courses in domestic management in accord with the scientific patterns of the present, if the domestic part of the picture is to possess any degree of congruity.

"Diet-Minded" Laymen

Ardent disciples of various dietary schools are always with us. The most impassioned of these zealots are often lay persons, who may have distinguished themselves in lines other than that of pure science as related to foods, yet their statements are so dogmatic that they are eagerly accepted by the uninitiated as authentic.

Any new and strange ideas on diet are assured of an immediate following. Apparently few publications consider themselves so far above mundane things that they fail to print occasional dietary advice or views which may or may not be sound. A recent issue of a popular monthly magazine contains an interview with one of the leading industrialists of this country, who, having discovered a diet which seems to agree with him, feels called upon to pass his discovery on to less favored individuals. He feels that the clergy are the logical ones to teach people correct habits of diet. In fact, by so doing, they would have fewer sinners to save, since correct eating prevents crime, or, in other words, wrong mixtures of food causes crime. His proposed plan is unique, at least. One reads the interview with a hopeful feeling that eventually coarse, wheaty, nut-flavored muffins may stop the crime wave. Another interview in the same publication indicates that a prominent member of the Senate believes that proper mixtures of food may raise the percentage of discharges from insane asylums from 37 to possibly 85 per cent,—cheering, though seemingly incredible. These interviews have been liberally quoted in the daily press. As the editor of the *New York State Journal of Medicine* cynically says in the May 15, 1929 issue, what he might say about health would seldom be considered to be news, owing to quantity production, but "what Henry Ford says about any phase of health attracts immediate notice."

All the highly colored views on diet do not necessarily come from people of possibly limited technical training. The present schools of ardent meat-eaters, acid-base balancers, anti-spinach oxalic-aciders, and so-called vegetarians are very active, the last named not too greatly daunted by recent set-backs in the restaurant field. Of this school Logan Clendening, in the May issue of the *American Mercury* amusingly says "Of course, when vegetarianism becomes obsessive and is linked with the idea of auto-intoxication the victim is compelled to give up all other mundane affairs and devote himself exclusively to his diet. I am informed on reliable authority that in a certain . . . . health institution the director now requires his patients to eat such a quantity of vegetables that in each case the dejecta will amount to three stools a day. It is said his patients develop other cow-like propensities and moo pathetically when internes or nurses pass the dining-room." Obviously, Dr. Clendening likes his meat, and advances many sound arguments for its place in the human dietary. Referring to a certain head of a famous chain of restaurants, Dr. Clendening says "No experience comes to mind which illustrates, better than this revulsion of his customers against a

vegetable cuisine, the fact that man instinctively is a meat-eating animal. His ideal diet, of course, is not one-sided in any direction. It is a mixture of all kinds of foods—meat, fruits, vegetables, fats, sweets, nuts, salts, bread and water—fresh and preserved, cooked and raw." After all, mankind has known fairly well *how* to eat; we are just beginning to learn *why* we eat certain foods.

M. P. H.

CURRENT COMMENT

The Membership Committee Needs Your Help

In writing the editorial on "Delay in Membership Action!" in the March, 1927, Journal of the American Dietetic Association, we stated that it was the aim of the Membership Committee to reduce the average time of acceptance of a new applicant to one month. Previous to that time, it required two months in most cases. Now, although the average time has been cut down to one month, there is still much to be desired in securing accurate and adequate data from prospective members. Inadequate information delays the vote of the Membership Committee because of the number of times the applicant must be communicated with for the necessary facts. Our records show that the necessity for returning an application blank for a signature or endorsement usually adds another month to the date of final passage, due to the fact that a full month elapses before the application is again in the hands of the Membership Committee. Some of the most common omissions are:

1. Failure of the prospective member to add personal signature at end of application.
2. Failure to secure endorsement of an active member of the American Dietetic Association.
3. Failure to give *inclusive dates* of positions held before or since student work.
4. Failure to include dues with membership application.
5. Failure to give the location of the college or university. For example, there are several Colleges of Industrial Arts, so that the city and state should also be given.
6. Failure to state the course taken and major included in course.

The membership dues, which should be sent in with the application, are as follows:

First quarter, October to October:

Active and Associate	$5.00
Junior	3.00

Fourth quarter, July to October:
Active and Associate..... 1.25
Junior..... .75

Members who join through their local associations during the first quarter secure a rebate of fifty cents, provided their local associations are affiliated with the national group. This is an added incentive to applicants to join through their local groups.

Probably, to many dietitians, endorsing such an application signifies merely their professional and social approval of the individual as a new member, one whose loyal support of the ethics and standards of our national organization would be a credit in every way, and who would in turn be benefited by her associations with our members. If an endorsement would also mean a sense of responsibility for adequate data, much unnecessary delay in final membership action would end.

QUINDARA OLIVER DODGE, *Chairman,*
Membership Committee.

SCHOOL OF DIETETICS FOR VICTORIAN HOSPITALS

According to a recent issue of the *Journal of the American Medical Association*, the management of the Alfred Hospital, Melbourne, acting on the suggestion of the Victorian charities board, has decided to establish a dietetic school at the hospital this year. Applications will be received from trained dietitians in the United States and Canada to take charge of the school for three years. The dietitian will be responsible for the selection and preparation of all meals in the institution for the patients and the staff. Three selected graduates of the Emily McPherson college of domestic economy in Melbourne will probably work under the dietitian. It is expected that dietitians will be trained for other institutions. Full details of the scheme are not being worked out until after the appointee arrives in Melbourne. It would seem that the scheme is the outcome of the recent visit of the secretary of the charities board to America and Britain.

RECENT PUBLICATIONS ON THE BUREAU OF HOME ECONOMICS UNITED STATES DEPARTMENT OF AGRICULTURE

A new short-cut method for calculating the nutritive value of diets has been developed by Dr. Edith Hawley of the Bureau of Home Economics. A forty per cent saving in time can be effected in studies of food habits by this method when a large number of family records of food consumption must be analyzed. This contribution by Dr. Hawley to

the methodology of dietary studies is a continuation of the research begun in the Department of Agriculture by Dr. W. O. Atwater nearly 50 years ago. The chief drawback to complete analysis of food records has been the labor and time involved in the methods hitherto used, but the short method now proposed by Dr. Hawley would cut this nearly in half. General adoption of this method by food economists will also yield comparable results and make it possible to obtain in shorter time a larger and more accurate picture of present-day American food habits. Copies of the bulletin describing this method may be obtained free, as long as the supply lasts, from the United States Department of Agriculture, Washington, D. C. Write for Technical Bulletin 105-T, "A short method of calculating energy, protein, calcium, phosphorus, and iron in the diet."

"Eggs at Any Meal" is the title of a leaflet by Lucy Alexander and Fanny W. Yeatman recently issued. This outlines the principles of egg cookery and illustrates them with typical recipes. For the familiar ways, it gives times and temperatures required for best results. It describes favorite combinations with other foods and flavors, and gives exact directions for making flat or fluffy omelets and sweet or savory souffles. Recipes for fruit whips illustrate the leavening power of egg whites, and directions for making custards, sauces, and salad dressings show how to get the benefit of the thickening properties of yolks. For a free copy of the Leaflet 39-L, giving over 20 egg recipes, send to the United States Department of Agriculture, Washington, D. C.

A child can become accustomed from babyhood to a variety of foods, flavors, and food textures, says Miss C. Rowena Schmidt, of the Bureau of Home Economics, in Leaflet 42-L, Good Food Habits for Children, just issued by the United States Department of Agriculture. As the child grows, says Miss Schmidt, take it for granted that he will enjoy the food set before him. Don't talk about "how good it is for him." Let the adults of the family set a good example by eating without comment all wholesome well-prepared foods, and let the mother make it her responsibility to see that the special dishes for the child are not only suitable in kind but carefully cooked and attractively served in fairly small portions. The leaflet may be obtained free from the United States Department of Agriculture, Washington, D. C.

Red Cross Luncheon

Are you coming to the annual convention of the American Home Economics Association in Boston, July 1–5? On Tuesday, July 2, at the

Women's Educational and Industrial Union a luncheon for enrolled Red Cross dietitians, nutritionists and those interested in Red Cross is being planned. Speakers will be Miss Anna Kloss, State Department of Education, Dr. M. Luise Diez, Director, Division of Hygiene, Massachusetts State Department of Public Health and Miss Clyde Schuman, Director, Nutrition Service, American Red Cross.

This is an opportunity to meet all your Red Cross friends and find out what they are doing.

A Standard Form for Bibliographies

The Journal is still young enough to be having growing pains. One of the recent symptoms was expressed in a desire for a standard form for bibliographies. In the future the following arrangement will be preferred:

For articles: Name of author and initials: Title of article, title of publication vol. no.: page (month) year. *For example,*

Talbot, F. B.: Basal metabolism in children, Physiol. Rev. 5: 477 (Oct.) 1925.

For books: Name of author and initials: Title of book, city in which published, name of publishers, year. *For example,*

DuBois, E. F.: Basal metabolism in health and disease, Philadelphia, Lea and Febiger, 1927.

It is hoped that prospective authors will follow the above plan so far as possible when preparing manuscripts.

The Editor.

TWELFTH ANNUAL CONVENTION OF THE AMERICAN DIETETIC ASSOCIATION

DETROIT, MICHIGAN, OCTOBER 7, 8 AND 9

The decision of the Executive Committee to hold the twelfth annual meeting of the American Dietetic Association in the city of Detroit, promises to be a very happy one.

Every loyal Association member feels herself an integral part of her organization, and as such she annually looks forward to the Convention where she may share in reviewing the progress made by her profession in the past and formulate plans for its future; where she may make the valuable contacts with other members and their activities—so essential for her own broadening outlook; where she may meet old friends and make the acquaintance of new ones; where she may, in general, refresh herself for the year's work ahead.

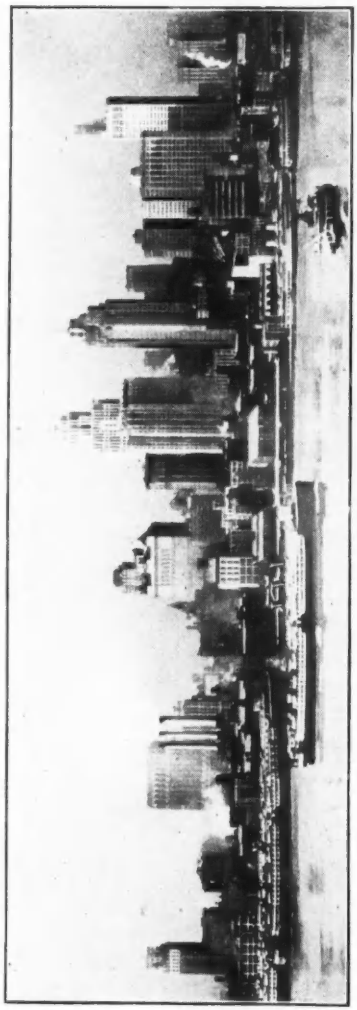
All of these considerations urge you to attend your Convention, regardless of where it is to be held. There are certain factors, however, which enter into your decision when you debate the question—"Can I attend this year?"

Among the first of these is, "Where is it to be held? Is the city an interesting one to visit? What has it to offer educationally and recreationally? Is it located a reasonable distance from my headquarters so that I can afford the time and money?" Then, "Who are the speakers to be, and what are their subjects? What other features are being planned that will make it worth while?"

Let us see how satisfactorily the selection of Detroit answers these questions.

"Detroit the Dynamic" is in reality no empty slogan. A city which has grown from merely "an attractive little metropolis" to a big, bustling one of a million and a half population within the last twenty years, carries in its very air the inspiration for energy and achievement. Everyone feels a stir of curiosity to visit this much talked of city, and see it for himself.

This year is indeed timely for a visit of the American Dietetic Association, for it marks the completion of a number of new hospital units in the city, all of which will be of interest to dietitians. Among those



VIEW OF CITY OF DETROIT

not so recent, but equally interesting are the Henry Ford Hospital, famous throughout the country; the excellently equipped North End Clinic with its unique diabetic kitchen. The spacious buildings of the University of Michigan Hospital at Ann Arbor are but a short ride from the city.

Recreationally, the city has a number of new and beautiful theatres, interesting industrial trips, a famous airport and excellent shopping facilities, one of the finest department stores in America having recently opened its doors to the public.

A most fortunate phase of the situation is that Detroit is centrally located. It is said that more than 70 per cent of the population of the United States lives within a night's ride of Detroit.

HENRY FORD HOSPITAL

The program for the Convention is in the competent hands of Florence H. Smith, and though plans for it are not yet complete enough for announcements, we know that Miss Smith can be counted upon.

Local arrangements are in charge of Mary Harrington, University Hospital, Ann Arbor. Detroit is one of the most hospitable convention cities known, and Miss Harrington is completing plans that will justly demonstrate its fame.

Later bulletins will reach you, carrying more news about the Convention. Watch for them, and plan, *now*, to be in Detroit October 7, 8 and 9.

DOROTHY KNIGHT HASSLER,
Chairman of Publicity.
5151 Guilford Avenue,
Indianapolis, Indiana.

Convention Program Plans

Plans for the meeting of the Association at the Statler Hotel in Detroit October 7–10 are developing rapidly. Because of the very central location a larger attendance than ever is expected. With the University of Michigan so near, Chicago just around the corner, and Rochester, Minnesota, within hailing distance, we have a wealth of material for the program. It is hoped that as many as possible will get in on Sunday, thus presenting an opportunity to get settled, greet old friends and perhaps see a little of the city of Detroit. Sunday afternoon there will be a tea. There will be a luncheon Monday noon, sponsored by the Local Arrangements Committee. This luncheon is really the formal opening of the meeting, and representatives of all local associations with allied interests will be there to welcome the American Dietetic Association. Monday afternoon there will be one speaker preceding the annual business meeting and election of officers. At this meeting each section chairman will present a report of the work of her section for the past year and suggestions for the future development. Monday evening there will be four section dinners in private dining rooms. Definite program plans will be sent to each member of the Association during the month of June.

Katherine Mitchell Thoma,
Acting Chairman, Program Committee.

BOOK REVIEWS

Practical Dietetics. 17th Edition. By Alida Frances Pattee. Price $2.75. Mt. Vernon, N. Y.: A. F. Pattee, 1929.

The steadily growing demand for this textbook for nurses has necessitated a seventeenth edition. The subject matter in the present book has undergone radical revision with a view of keeping the reader informed as to the latest facts and the constantly changing viewpoints in regard to feeding both the well and the sick. The text has also been entirely rewritten with the aim of reflecting the most modern methods of teaching dietetics. The author expresses the hope that these changes will enhance the value of the work as an authoritative treatise on the subject. The appearance of the book will be found somewhat different from that of previous editions owing to the employment of another style of typography, which should enable the reader to use it with even greater facility than heretofore. The entire book has also been reset and reprinted. The section dealing with vitamins has been expanded to include material on the newly discovered vitamins, as well as the results of latest research work in connection with the source and function of vitamins in general. Other chapters also have received similar revisions.

That portion of the work which treats of the proper preparation and serving of foods has received special attention, since this is, and must always be, a basic part of the course of nursing. The energy value, as well as the weight of protein, fat and carbohydrate, has been indicated in each recipe and all recipes have been recalculated and rechecked to insure the greatest possible degree of accuracy.

New material has been added to Part III, including the latest diets in use by specialists and in hospital clinics. A number of diets recommended by eminent physicians for use in various diseases and used in their present day practice are presented, in order that the nurse may be familiar with many of the well known diets. The section on pregnancy now includes material on the nursing care of toxemias, while the chapter covering infant nutrition has been extended to include the newer practices of leading pediatricians.

The tables throughout the book have been enlarged and revised. Most of them have been separated from the text, appearing together in the appendix. A new and important table has been added, showing the energy value and the weight of protein, fat and carbohydrate, also that of calcium, phosphorus and iron, contained in 100 gram portions and average hospital servings of most of the foods in common use. Their relative importance as sources of vitamins A, B and C is also indicated, as well as their percentage of fiber, their acid-base reaction and their purin content.

In this new edition, professors in leading schools of Home Economics have assisted in the revision of the theoretical portion of the work, while the chapters on Diet in Disease have been arranged under the personal supervision of leading members of the medical profession.

Diabetic Manual. 4th edition. By Elliott P. Joslin, M.D. Price $2.75. Philadelphia: Lea and Febinger, 1929, pp. 248.

A welcome revision of Joslin's classic manual, with its cheering dedication "To those individuals who have conquered diabetes by living longer with it than they were expected to live without it."

The Diabetic Life. 4th Edition. By R. D. Lawrence, M.D. Price $2.50. Philadelphia: P. Blakiston's Son and Co., 1928, pp. 188.

Dr. Lawrence states in his preface that "great changes, however, have been made in the table of food values for carbohydrates, as the result of extensive analyses carried out for the past three years by Dr. McCance and myself." If so, this should be sufficient excuse for writing the book. The "line ration scheme" of figuring the patient's diet, origi-

nated by the author, may offer in itself additional justification for the book's publication.

A Handbook for the Diabetic. By Albert H. Rowe, M.D. Price $2.50. New York: Oxford University Press, 1928, pp. 129.

This is another addition to the large and growing family of handbooks for the diabetic. According to the author, it is written for the use of the patient and dietitian as well as the physician. Certain statements such as "diabetes in children usually develops as a result of some infection" and "infections are probably the main cause of diabetes even in adult life" seem questionable in the light of our present knowledge of the etiology of the disease.

A Patient's Manual of Diabetes. By Herbert W. Moxon, M.D. Price $2.25. New York: William Wood and Co., pp. 132.

Still another handbook for the diabetic library, compiled with a definite objective, since it is "written with both eyes upon the patient for whom primarily it is intended." The author follows the "line ration" scheme of Lawrence in calculating diets. The book was developed from a series of special lectures given at the Perth Hospital, Perth, Western Australia.

Diabetes and Its Treatment. By Frederick M. Allen, M.D. Price $.35. New York: Funk and Wagnalls Co., pp. 98.

A further addition to the available diabetic literature, one of the National Health Series booklets edited by the National Health Council. This booklet offers authentic information in a condensed convenient form at a very low cost.

What Every One Should Know about Eyes. By F. Park Lewis, M.D. Price $.35 New York: Funk and Wagnalls Co., 1928, pp. 70.

Another of the National Health Series, written by an authority on the subject.

Care of the Mouth and Teeth. By Harvey J. Burkhart, D.D.S. Price $.35. New York: Funk and Wagnalls Co., 1928, pp. 45.

Helpful information on the care of the teeth with a chapter on the Relation of Diet to Diseases of the Teeth.

Essentials of Medicine. 8th Edition. By Charles Phillips Emerson, M.D. Price $3.00. Philadelphia: J. P. Lippincott Co., 1926, pp. 588.

This book is just what its title implies, a condensed text-book of general medicine, and should prove to be an invaluable reference book for the dietitian. It offers an authentic source of information for the student dietitian interested in acquiring a medical background for her future professional work.

CURRENT LITERATURE*

KATHLEEN M. LEWIS

American Journal of Diseases of Children

Vol. 37, February, 1929

* Acid-base metabolism: effects of administration of salt and of restriction of water. L. Schoenthal.—p. 244.
* Experimental study of the acid-base equilibrium in children with idiopathic epilepsy. I. McQuarrie and H. M. Keith.—p. 261.
* Effect of high cereal diets on the growth of infants. V. B. Appleton.—p. 284.

Calcium and phosphorous metabolism in artificially fed infants. A. L. Daniels, G. Stearns and M. K. Hutton.—p. 296.

* The vitamin content of milk used in infant feeding. I. G. Macy and J. Outhouse.—p. 379.

Vol. 37, March, 1929

The treatment of rickets with irradiated ergosterol. E. T. Wilkes, D. W. Follett and E. Marples.—p. 483.

Acid-base metabolism: Effect of administration of salt and of restriction of water. The administration of sodium chloride to infants, in addition to a regular diet and a restriction of water, resulted in:

1. An increase in chloride concentration of the plasma.
2. Usually a moderate reduction of plasma bicarbonate.
3. A tendency for the reaction to shift towards the acid side.
4. Changes in both directions in the water content of the plasma as shown by protein concentration.
5. A constant increase in excretion of bicarbonate in the urine with a shift in reaction to alkalinity.
6. A relative increase in excretion of fixed base over fixed acid.
7. A slight moderate febrile reaction in most instances.

The feeding of a concentrated food with restriction of water produced the same changes in metabolism as did the administration of sodium chloride.

Experimental study of the acid-base equilibrium in children with idiopathic epilepsy. The acid base equilibrium has been studied in children with essential epilepsy under fairly well controlled conditions. Administration of carbohydrate to one patient with severe epilepsy, and carbohydrate and insulin to another, while they were under dietary control, caused recurrences of seizures within nineteen hours. The seizures did not occur until after a mild degree of alkalosis was present. One patient with severe epilepsy was observed over a period of forty-one days in order to compare the differences in: the effects of fasting; of a ketogenic diet with a predominately acid ash; of a ketogenic diet with a predominately alkaline ash; and of a non-ketogenic, high protein diet with a strongly acid ash, upon the occurrence of convulsions. The periods showing the fewest convulsions were those in which the patient fasted or was on a ketogenic diet having an acid ash. The therapeutic effect of the ketogenic diet was abolished if the diet had a slightly alkaline ash.

The opinion is expressed that the abnormality in acid-base equilibrium observed in certain cases of epilepsy probably is not the causative factor or a matter of chief importance in the mechanism of seizures, but is an incidental accompaniment of a more basic disturbance in the physiology of the nerve cell.

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* Beginning with this issue the students of the Dietary Department of the Johns Hopkins Hospital are responsible for these abstracts with the exception of the abstracts from the Journal of Nutrition, which were submitted by Frances B. Floore of the Dietary Department of the University of Michigan Hospital.

Effect of high cereal diets on growth of infants. A study was made of Japanese and Filipino infants in Hawaii during the first two years of life. The diet of both races contains liberal amounts of rice and lacks milk. The infants are breast fed. These diets, high in cereal and without milk, (except during the nursing period) result in moderate infant mortality and good growth of the offspring for the first five months of life while the infants are dependent on breast milk alone, if the mothers' diets include adequate supplementary food other than milk. After six months, when the infants need additional food, the gain in weight is not so rapid as when cow's milk is used as a supplementary food. The Hawaiian infants were examined for skeletal developments. Rickets was found to be extremely rare and mild when it occurred.

The vitamin content of milk used in infant feeding. Experimental studies have shown that average human milk contains vitamin A, but only half as much vitamin B as is found in cow's milk. In respect to the antirachitic factor, human milk is deficient, whereas cow's milk contains a small amount. The possibility of the dissipation of these substances in cow's milk through adverse treatment in the preparation of formulas is emphasized.

American Journal of Physiology

Vol. 88, February, 1929

* Experimental bone marrow reactions. G. L. Muller.—p. 130.

* Further observations on the nature of hunger contractions in man. R. D. Templeton and O. Johnson.—p. 173.

Vol. 88, March, 1929

Proof that the stimulating effect of fat on metabolism is due to the fatty acid radical of the fat molecule and not to the glycerol radical. E. Williams, L. D. Seager and W. E. Burge.—p. 237.

* The effect of fasting upon certain phases of carbohydrate metabolism. H. M. Hines, J. D. Boyd and C. E. Luse.—p. 240.

* Experimental bone marrow reactions. G. L. Muller and A. Scorpio.—p. 259.

Vol. 88, April, 1929

Metabolism following anoxemia. E. G. Martin, J. Field and V. E. Hall.—p. 407.

* Studies in diabetic insipidus. H. Bourquin.—p. 519.

Experimental bone marrow reactions. The effects of feeding water and alcohol extract of beef liver as well as alcohol treated liver and broiled beef liver, on the blood regeneration of pigeons, after the production of a physiological anemia through starvation and consequent bone marrow depletion, is described. The results support the theory that the suppression of red blood cell and hemoglobin formation by liver feeding is due, not to lack of essential substances in the liver fed, but to the excess of some inhibitory substance, affecting, no doubt, the "reticulo-endothelial system" by decreasing its functional activity.

Further observations on the nature of hunger contractions in man. The purpose of the experiments was to determine whether the contractions of an empty stomach are similar in nature to the activity during digestion, and whether contraction of the empty stomach could be recorded, without a balloon, by way of the esophagus. The article supports the view that hunger contractions are not dependent on mechanical stimulation of the gastric mucosa.

The effect of fasting upon certain phases of carbohydrate metabolism. Comparisons were made of the response of non-fasting and fasting dogs to a continuous intravenous injection of glucose at the rate of four grams per kilogram of body weight per hour for a period of two hours. Animals in the fasting condition exhibited a greater degree of glycosuria and hyperglycemia than the non-fasting controls. No significant changes in the acid base balance of the blood was noted. It is suggested that the effect of fasting upon the carbohydrate tolerance should be regarded as an impaired function of the organism as a whole, rather than essentially as an impairment of any one particular mechanism.

Experimental bone marrow reactions. The study concerns the effect of feeding beef kidney, pancreas, brain and spleen, on the blood and the body weight regeneration in pigeons, in which anemia had been produced

by starvation. Kidney, as an exclusive food, is not so effective as pancreas or spleen for blood regeneration. Brain proved to be inadequate as a food. Varying amounts of fatty infiltration of the liver was found in animals from all four groups except the one in which brain was fed.

Studies in diabetes insipidus. A diuretic substance was demonstrated in the urine of dogs with experimental diabetes insipidus which was not present in like quantities in the urine of normal dogs. Extracts of large quantities of mammillary bodies and thalamus of the brain were also used for experimental purposes.

American Journal of Public Health

Vol. 19, February, 1929

Failure of standard method for visible dirt in milk to meet Connecticut requirements. F. L. Mickle.—p. 172.

Vol. 19, March, 1929

Age distribution in milk-borne outbreaks of scarlet fever and diphtheria. E. S. Godfrey.—p. 257.

Vol. 19, April, 1929

* When are meats or fish spoiled? Report of committee of American Public Health Association.—p. 389.
* Fruits, vegetables and their products. Report of the Committee of American Public Health Association.—p. 393.
* Cereals and their products. Report of the committee of American Public Health Association.—p. 410.

When are meats or fish spoiled? The committee reports a number of interesting tests for the determination of the spoilage of meat and fish. Research along these lines is urged as an increased protective measure for the health of the public.

Fruits, vegetables and their products. A review of the recent progress made in the manufacture and preservation of fruits and vegetables is given.

Cereals and their products. A year's report of the nutritional value of bread, with a brief discussion of white versus whole wheat bread is given. Recent experiments on bread proteins and bread deficiencies are noted.

Archives of Pediatrics

Vol. 46, February, 1929

* A study of the routine use of powdered whole milk in infant feeding. L. O. Ashton, O. L. Stringfield, and C. W. Martin.—p. 75.
* A comparative study of certified and pasteurized milk in infant feeding. M. S. Lewis.—p. 85.
* Hygienic treatment of underweight children. O. B. Cordua.—p. 99.

Vol. 46, March, 1929

* An experimental study of the use of unsweetened evaporated milk for the preparation of infant feeding formulas. McKim Marriot and L. Schoenthal.—p. 135.

A study of the routine use of powdered whole milk in infant feeding. The opinion is expressed, upon the basis of a review of the experiences of many authorities, that when breast feeding is impossible, dried milk is a very valuable substitute. The growth curve of infants fed on dried milk closely resembles the average growth curve of breast fed infants, although at a lower level. From this it is concluded that dried whole milk loses none of the characteristics which are necessary for the support of normal growth in infants. These statements, however, will only hold true when a very high quality of dried milk is used. The roller method of drying is considered the most scientific and sanitary.

A comparative study of certified and pasteurized milk in infant feeding. When breast milk cannot be used for infant feeding, cow's milk is considered the best substitute. Since the character of the feeding during the first few years of life is the main factor in the health destiny of the infant, it is necessary to use the very best quality of cow's milk. The object of this article is to determine the nutritional value, safety, usefulness, and comparative value of the two popular forms of cow's milk, certified and pasteurized. For this purpose a number of infants were divided into two groups, one fed on certified milk and the other on pasteurized. The results show that certified milk of a superlative quality was the most satisfactory in every respect.

Hygienic treatment of underweight children. The hygienic treatment of a group of eighteen

underweight children at an eight week's summer school is given in detail. The results were very satisfactory, showing a gain of 5.4 pounds per child. In addition to the temporary value of the methods used in improving nutrition, the pupils were taught the principles of correct living. The plan offered a most useful method of preventive medicine.

An experimental study of the use of unsweetened evaporated milk for the preparation of infant feeding formulas. This article discusses the suitability of unsweetened evaporated milk in infant feeding, and considers its possible advantages and disadvantages. The result of experimental study has shown that from a nutritional standpoint it is the full equivalent of pasteurized, or boiled whole cow's milk, and that it is unattended by any nutritional disturbances. Its sterility, its ready digestibility and uniformity of composition, are distinct advantages which recommend it for general use in infant feeding formulas.

Hospital Management

Vol. 27, February, 1929

• An ideal food service plan for 140 patients. P. C Quintard and C. F. Neergaard.—p. 61.

Vol. 27, March, 1929

• How to get the most in satisfaction and value from canned foods. L. Graves.—p. 38.

Central food service in Hahnemann's skyscraper building. J. S. Ward.—p. 78.

Vol. 27, April, 1929

Kitchen equipment and food service progress comes from study. E. Tuft.—p. 82.

An ideal food service for 140 patients. The centralized food service is fast coming into the foreground as the ideal method of serving hospital patients. This system calls for a much larger kitchen crew than the decentralized system, but the total number of employees is considerably less than when the serving of the food and the dishwashing is accomplished on each floor. "The chef, the special diet department, and the hot and cold departments must keep time to the controlling baton of the conducting dietitian."

How to get the most satisfaction and value from canned goods. In a well managed culinary department there is place for more than one grade of canned and dried products, if wisely used. If the inferior grade means just imperfection in size, appearance or some similar characteristic, it still can be used to advantage in many ways. If the inferiority means deterioration, it should not be used at all. There is an art in matching the grades and the size of the can to the number and type of people served.

Journal of American Medical Association

Vol. 92, February 2, 1929

• The curd and the buffer in infant feeding. J. Brenneman.—p. 364.

Vol. 92, February 9, 1929

• The relationship of nutrition to pneumonia in infancy and childhood. L. H. Barenberg, D. L. Greene and H. Abramson.—p. 440.

Vol. 92, February 23, 1929

• Physical and mental growth of breast fed and artificially fed infants. C. Hoefer, and M. C. Hardy. —p. 615.

• Liver extract in the toxemia of pregnancy. H. A. Miller and D. Ben Martinez.—p. 627.

Dangers of fasting. Editorial.—p. 651.

Vol. 92, March 2, 1929

Effects of loss of gastric juice. Editorial.—p. 724.

The sugar in human blood. Editorial.—p. 725.

Vol. 92, March 9, 1929

• Gastric digestion of meat in health and in disease. M. E. Rehfuss and G. H. Marcil.—p. 763.

• Routine use of the vitamin B factor in infant feeding. R. H. Denett.—p. 769.

Vol. 92, March 16, 1929

• Relation of the altitude of the sun to its antirachitic effect. F. A. Tisdall and A. Brown.—p. 860.

• Studies in asthma: Ezema—it's relation to allergy. E. S. O'Keefe and F. M. Rackemann.—p. 883.

Syphilitic pancreatitis simulating diabetes. M. Campagna.—p. 894.

Necessity for care in the treatment of water deficit. Editorial.—p. 898.

Weight reduction and circulatory efficiency. Editorial.—p. 898.

Acid mouth. Editorial.—899.

Vol. 92, March 23, 1929

• Diabetes in twins. W. S. Curtis.—p. 952.

• Antigenic properties of evaporated milk. O. I. Cutler.—p. 964.

Protein shock in nephritis. G. Kolischer.—p. 968.

• A nutritional disturbance in adults resembling celiac disease and sprue. W. H. Holmes and P. Starr.—p. 975.

Vol. 92, March 30, 1929

The formation of bile and its disturbances. Editorial.—p. 1129.

Food poisoning by heat-resistant bacterial poisons. Current Comment.—p. 1130.

Vol. 92, April 6, 1929

• Starvation as a therapy. Editorial.—p. 1182.

Vitamin content of treated tomatoes and asparagus. Editorial.—p. 1183.

Vol. 92, April 13, 1929

• Ways in which emotion can effect the digestive tract. W. C. Alvarez.—p. 1231.

• The development of the breast fed baby. Editorial.—p. 1268.

• Hypervitaminosis. Editorial.—p. 1270.

• The mineral content of cereal grains. Current Comment.—p. 1271.

Vol. 92, April 20, 1929

• The etiology of beriberi. S. Matsumura, G. Kakinuma, K. Kawashima, K. Tanikawa, S. Ochiai, R. Miyota, K. Fujisaki, R. Kanao, K. Noguchi, K. Aoki, T. Sato, K. Ito, and M. Suzuki.—p. 1325.

• Effect of liver on the blood sugar level. H. Blotner and W. P. Murphy.—p. 1332.

Human milk and vitamin A. Editorial.—p. 1352.

Vol. 92, April 27, 1929

• Calcification of the vessels in diabetes. L. B. Morrison and I. K. Bogan.—p. 1424.

The curd and the buffer in infant feeding. Infants under eighteen months of age in the Children's Memorial Hospital, when parenteral infections were prevalent, did not show any appreciably different reaction to acidified and nonacidified evaporated milk that had been diluted one half and strengthened with ten per cent Karo Corn Syrup. No general deductions were made from this limited investigation of the relative rôle of the acid, as acid, in infant feeding. The results have been so uniform that there seems justification for concluding that the acid plays a minor, or even negligible part, in the therapeutic result; if so, it is necessary to assume that the curd may play a major rôle.

The relationship of nutrition to pneumonia in infancy and childhood. Nutrition, determined by body weight, did not bear any relationship to the frequency of pneumonia in childhood. This was shown in statistics of a children's institution furnishing excellent medical supervision, whose standards of nutrition met those of the United States Childrens' Bureau. Nutrition was not a causative factor in the mortality rate among children from one to five years, while of the deaths under one year of age, 20 per cent were underweight and 13 per cent normal. The opinion that rachitic conditions predispose to pneumonia was disputed when it was shown that of 114 cases of rickets, only 4 per cent developed pneumonia, whereas among 102 non-rachitic cases, 16 per cent developed pneumonia.

Physical and mental growth of breast fed and artificially fed infants. Artificially fed children ranked below breast fed children both physically and mentally, and those who were breast fed from four to nine months were definitely superior to all of the other groups. Height does not seem to be influenced by the type of feeding. Children who were fed exclusively on breast milk longer than nine months were mentally the lowest of all the groups, and as the length of the nursing period increased beyond nine months, there was a progressive decrease in the intelligence ratings. Of the two types of artificial foods most commonly used by these children, modified cow's milk appeared to be a more satisfactory aid to later development than unsweetened evaporated milk. Occasionally certain children tolerated only unsweetened evaporated milk, but it is questionable whether this food should ever be given alone over an extended period.

Liver extract in the toxemia of pregnancy. The theory that the liver has a certain neutralizing function in cases of eclampsia and that this function could be conserved by the additional use of liver substance, led to the use of heparmone in treatment of preeclamptic and eclamptic cases. Of the 255 preeclamptic patients treated, 4 developed convulsions. Of 43 eclamptic patients treated, 3 died. The value of this method of treatment cannot be conclusively proved until further studies have been made.

Gastric digestion of meat in health and in disease. In a series of experiments on the digestion of meat by the diseased stomach and the normal one, the following conclusions were reached: the normal response to

meats is more active than to carbohydrates, producing a higher degree of acidity; not all normal stomachs react alike to beef products, one type showing a quick gastric digestion, while another shows a slower response; and the total acidity produced by meats is thirty per cent more than that produced by bread stuffs. In conclusion, meat is an intragastric stimulant, producing in the healthy individual a maximum response on the part of the gastric mucous membrane, which response is altered in disease.

Routine use of vitamin B factor in infant feeding. The results of a study of one hundred-fifty infants fed with food containing wheat-germ sugar, a substance rich in the vitamin B factor, showed that the average infant diet is deficient in vitamin B. Cow's milk, and in some cases, breast milk, does not contain the optimal quantity of vitamin B, and therefore some B factor, other than that in the milk, should be added to the food of all bottle-fed infants. One level tablespoonful of this wheat-germ sugar provides as much of the anti-neuritic factor as one quart of milk, and as much of the pellagra-preventing factor as ten ounces of milk. It is easily used and quite palatable. From one to three tablespoonfuls should be given daily to every bottle-fed baby during the first year of life. This sugar is now on the market as Vitavose, a Squibb and Sons product.

Relation of the altitude of the sun to its antirachitic effect. A series of experiments with rats to determine the relation of the altitude of the sun to its antirachitic effect, showed that there was a marked increase in the effect of sunshine when the sun reaches an altitude of 35 degrees or more. The study of geographic distribution of rickets showed that rickets exists mildly in places where the minimum altitude of the sun is not below 35 degrees. Severe rickets were found chiefly in cities where the altitude of the sun is below 35 degrees for the most part of the year.

Studies in asthma. Eczema—its relation to allergy. O'Keefe and Rackemann have studied both children and adults to determine how far the theory of hypersensitiveness can be applied to all cases of eczema. Eczema in children begins before the end of the second year in 95 per cent of the cases, being slightly more common in boys. In adults, the onset varies up to 60 years of age and is more common in women. In children, skin tests were positive in 52 per cent, and in adults, 38 per cent. Egg, wheat, and milk showed positive reactions in all but 125 positive cases in children. Removal of these foods from the diet showed improvement in 85 per cent of the cases. Breast feeding does not have any bearing on the determination of the disease or upon the results of the treatment in infants. A positive family history of allergy was found in 28 per cent of the children and 37 per cent of adults.

Diabetes in twins. There are only thirteen cases on record of diabetes in twins. The existence of diabetes in twins in some cases points to heredity. If diabetes developes in one twin, the other is considered potentially diabetic, particularly if the two are homologous. An overstrain on the carbohydrate metabolism should be avoided.

Antigenic properties of evaporated milk. This article relates a series of tests made on rabbits and guinea pigs, using three varieties of whole milk—raw, pasteurized, and evaporated, from which the following conclusions were drawn.

1. Heat applied to cow's milk, in the process of preparing evaporated milk, does not appear to change the antigenic capacity of the casein as determined by anaphylactic reactions.

2. Evidence has been found that there is an alteration in the antigenic properties of the whey protein present in raw milk, when heat is applied in order to evaporate and sterilize cow's milk.

A nutritional disturbance in adults resembling celiac disease and sprue. Five clinical studies are given of a condition which resembles celiac disease and sprue, but which

may easily be mistaken for other diseases. The most characteristic symptoms are emaciation and fatty diarrhea. Of the five cases reported, treatment with a varied diet, containing small amounts of carbohydrate and fat and a large amount of protein, gave the most satisfactory results. An excess of carbohydrate, particularly cane sugar, increased the tendency to flatulence, while an excess of fat increased the diarrhea. Large amounts of protein did not aggravate the tetany (which was also present). Heliotherapy, cod liver oil, yeast concentrate, tomato juice and orange juice were used. Large doses of calcium salts, given during the fasting state and with meals, modified the diarrhea, and often raised the level of serum calcium so that improvement in four of the five cases was noted when this level was normal or nearly normal.

Starvation as a therapy. More controlled observations, both in the clinic and in the laboratory, are needed before the final word can be said on the value and the limitations of fasting. Sprigg concludes that complete fasting is beneficial in appendicitis, peritonitis, and ulcers, largely on the basis of the rest to the digestive organs afforded by the absence of food. Short complete fasts of one or two days are said to be valuable in such diseases as pneumonia, severe fevers, acute nephritis, chronic uremia, migraine, hyperthyroidism, local infections, phlebitis, rheumatism and rickets. A number of physicians have reported a decrease in the number and intensity of epileptic attacks in patients with idiopathic epilepsy during fasting. In obesity, Sprigg does not recommend complete fasting, but a severe restriction of the caloric intake to 1,000 or 1,300 calories.

Ways in which emotion can affect the digestive tract. Through a series of experiments it has been shown that emotions can stimulate or inhibit the flow of saliva, pancreatic and gastric juices as well as the peristaltic movements of the intestines. Normally the sight, smell, or thought of food prepares the digestive tract for work, but this may be hindered if mental or physical fatigue is present. After operations, when there is need to start peristalsis, it has been suggested that the patient be allowed to smell, taste, or even chew a bit of food, especially meat.

The development of the breast fed baby. Children who are fed exclusively on breast milk for longer than nine months develop physically at a normal rate but mentally their progress is retarded. The observations already made by Hoefer and Hardy made further research advisable in order to determine the best possible artifical feedings for children who cannot be breast fed.

Hypervitaminosis. It is shown that ill effects can result from a surfeit of vitamins due to the use of truly enormous doses, quantities sometimes reaching 100,000 times the minimal effective dose. Cod liver oil or ergosteral should be administered with care, and the toxic effect of an overdose be realized.

The mineral content of cereal grain. The source of grains and their cultivation plays such an important rôle in their mineral content that the differential mineral value between common cereal products cannot be accurately determined.

The etiology of beriberi. The results of a number of experiments on beriberi in Japan prove that the bacillus of the disease is its principal etiologic factor. A deficient diet merely seems to be a factor that constitutes a disposition to the disease.

Effect of liver on the blood sugar level. A study of the effect of feeding liver on the blood sugar curve disproves the theory that liver is an unsuitable food for diabetic patients. Observations suggest that liver contains a blood sugar reducing substance active when taken by mouth and with an effect on the blood sugar concentration similar to that obtained with insulin. The authors feel that 180 grams of liver will have an effect on the blood sugar equal to that of 10 to 15 units of insulin.

Calcification of the vessels in diabetes. Calcification of the vessels of the legs was present

in 53 per cent of 324 diabetic patients. The authors' conclusion was that diabetes mellitus is an etiologic factor in the production of vascular calcification.

Journal of Biological Chemistry

Vol. 81, February, 1929

* Blood regeneration in severe anemia. W. M. Sperry, C. A. Elden, F. S. Robscheit-Robbins and G. H. Whipple.—p. 251.

The metabolism of sulphur. H. B. Lewis and S. A. Lough.—p. 285.

* A note on the determination of the digestibility of protein by Bergeim's method. W. D. Gallys.—p. 321.

* The nature of blood sugar. O. Folin.—p. 377.

Glycogen formation in the liver from d and l lactic acid. C. F. Cori and G. T. Cori.—p. 389.

The effect of insulin on the distribution of non-protein nitrogen in the blood. S. E. Kerr and V. H. Krikorian.—p. 421.

Vol. 81, March, 1929

* The vitamin A, B and C content of artifically versus naturally ripened tomatoes. M. C. House, P. M. Nelson and E. S. Haber.—p. 495.

* The association of vitamin A with greenness in plant tissue. The vitamin A content of asparagus. J. W. Crist and M. Dye.—p. 525.

Proteins of the avocado. D. B. Jones and C. E. F. Gersdorff.—p. 533.

Factors in the metabolism of lactose. R. C. Corley.—p. 541.

Blood as a physicochemical system. (8) Diabetic coma. D. B. Dill, A. V. Bock, J. S. Lawrence, J. H. Talbott and L. J. Henderson.—p. 551.

The fluctuations of the capillary blood sugar in normal young men during a twenty-four hour period (including a discussion of the effect of sleep and of mild exercise). H. C. Trimble and S. J. Maddock.—p. 595.

The influence of diet on the body fat of the white rat. H. C. Eckstein.—p. 613.

Vol. 82, April, 1929

Two revised copper methods for blood sugar determination. O. Folin.—p. 83.

* The composition of spinach fat. J. H. Speer, E. C. Wise and M. C. Hart.—p. 105.

* The unsaponifiable fraction from spinach fat. F. W. Heyl, E. C. Wise and J. H. Speer.—p. 111.

The determination of true sugar in blood. E. S. West. F. H. Scharles, and V. L. Peterson.—p. 137.

Blood regeneration in severe anemia. It is demonstrated that practically all fractions and residues from beef liver, whether obtained by acid or digests by pancreatic or peptic ferments, contain materials which the anemic dog is able to utilize for forming red cells and hemaglobin. The peptic digest contains the highest concentration of potent factors.

A note on the determination of the digestibility of protein by Bergeim's method. In 1926, Bergeim suggested a procedure for determining the digestibility of food. Small amounts of iron oxide were fed and the ratio of the amount of iron to the amount of any food substance in the diet and in the feces was then determined, and from this, the percentage of utilization was calculated. With diets containing soluble iron salts, or under conditions which do not permit use of iron oxide, silica may be used.

The nature of blood sugar. Folin justifies the new copper method for blood sugar analysis, used in the work of Folin and Swedberg. Though lacking confirmation, this new method indicates the presence of a sugar other than glucose in the blood. This "non-glucose sugar" has escaped determination by other methods because it has a much lower reducing power than glucose.

The vitamin A, B and C content of artificially versus naturally ripened tomatoes. Statistics are tabulated to show that the commercial method of ripening tomatoes in an ethylene-air mixture produces fruit which is equally as rich in vitamines A, B and C as fruit which has been picked green and ripened in the air.

The association of vitamin A with greenness in plant tissue. The vitamin A content of asparagus. Green and bleached asparagus were fed daily to albino rats. The green asparagus contained sufficient vitamin A to promote health and growth, but the bleached asparagus gave no stimulus to either health or growth. Cooking bleached asparagus in open kettle fashion affected some improvement in its nutritive quality, though not rendering its value comparable to that of the green product cooked in the same manner. Green asparagus was found to contain lower percentages of water and iron than the bleached product, but higher percentages of nitrogen, sulphur, calcium and phosphorous.

The composition of spinach fat. Spinach is shown to be richer in fat-soluble vitamins than most vegetables. In order to differentiate between growth producing and antirachitic factors, work was done on the unsaponifiable extract of spinach. Of the fatty acids extracted, 47 per cent were present as glyceride and 53 per cent free. Solid acids recovered, consisted chiefly of palmitic, stearic and uratic acid; liquid acid contained linoleic and oleic acid. Volatile fatty acids were present only in traces, if at all.

The unsaponifiable fraction from spinach fat. Due to the controversy concerning the amounts of vitamins A and D in the unsaponifiable fraction of spinach fat, in which resides vitamin activity, a chemical experiment was made to isolate individual compounds in order to form a more complete chemical background for the biological investigations. The unsaponifiable fraction of spinach fat was found to contain a hydrocarbon, a phytosterol, two alcohols, and an unsaturated oily compound.

Journal of Home Economics

Vol. 21, February, 1929

* Dental defects in relation to child nutrition. E. S. Davies.—p. 106.
* Rice polishings as a source of vitamin B. H. E. Munsell.—p. 124.

Vol. 21, March, 1929

Japanese institute for nutrition. Editorial.—p. 195.
* Some comparisons of the nutritive value of whole wheat bread and white bread. S. M. Hauge and A. P. Beadle.—p. 199.

Vol. 21, April, 1929

Home Economics in the Phillippine Islands.—E. A. Stewart.—p. 237.
* The cost and nutritional effect of making an institutional diet palatable. B. B. West and R. Okey.—p. 254.

Dental defects in relation to child nutrition. Sufficient amounts of calcium, vitamins A and C, and sunshine, have all been shown to be necessary for the formation of good teeth in prenatal and postnatal life. Conversely, it may be assumed that when excellent dental conditions exist, these nutritive factors have been present; and when dental conditions are bad, the search for the cause may well begin in a study of these elements of the diet.

Rice polishings as a source of vitamins. In a feeding experiment with white rats, to determine the value of rice polishings as a source of vitamins F and G, it was evident that the polishings contain very little vitamin G, but are a good source of vitamin F.

Some comparisons of the nutritive value of whole wheat bread and white bread. In a series of experiments planned to demonstrate the relative nutritive value of white and whole wheat bread, the latter was found to be superior to white bread as a source of vitamin G, protein and minerals.

The cost and nutritional effect of making an institutional diet palatable. The flavorless food, resulting from large quantity cooking of the type in use in many institutional kitchens at the present time, may be a very real etiological factor in malnutrition. An improvement in nutritional régime, which consists primarily in handling foods so as to preserve flavor and vitamins, may result in a marked improvement in the general state of health of children. Food so prepared may be available without greater cost than the flavorless products of the usual institutional kitchen, provided the routine procedure of the staff, as well as the purchasing of the food and the planning of the meals, is under the supervision of a competent trained dietitian. Low food costs are due equally, perhaps, to the elimination of two sources of waste, the loss of food value in cooking, and food uneaten because of lack of palatibility.

The Journal of Nutrition

Vol. 1, March, 1929

* The mineral content of grain. J. E. Graeves and C. T. Hirst.—p. 93.
* Blood formation of the albino rat on a standard dietary régime. Barnett Sure, M. C. Kik, and D. Walker.—p. 299.
* Effect of purified diets, and their modifications, on growth and testicular degeneration in male rats. K. E. Mason.—p. 311.
* Relation of soil fertility to vitamin A content of leaf lettuce. M. Dye and J. W. Crist.—p. 325.

* Obesity as a precursor of diabetes. S. F. Adams.—p. 339.
* Heat production of the albino rat. Technique, activity control and the influence of fasting. F. G. Benedict and G. MacLeod.—p. 343.

The mineral content of grain. Three main factors which caused a variation in the mineral content of grain were (1) irrigation, (2) soil, (3) variety of grain grown. Wheat showed a wider variation in calcium than any of the other grains. The average calcium content was found to be much higher than that reported by Sherman and Rathamsted; this factor would influence the nutrition of humans and farm animals living on a diet consisting mostly of grains.

Blood formation of the albino rat on a standard dietary régime. Sex plays an unimportant rôle in the concentration of hemoglobin and erythrocytes content in the blood of the albino rat, but age has a determining influence. Anemia during pregnancy was controlled if the diets contained an abundance of wheat embryo or yeast.

Effect of purified diets, and their modifications, on growth and testicular degeneration in male rats. Fresh lettuce was found to be eight times as rich in vitamin E as dried lettuce, but both produced excellent growth in rats.

Relation of soil fertility to vitamin A content of leaf lettuce. An experiment was conducted in which three pots of plants were differently treated as to soil, and lettuce was grown in each one under otherwise identical conditions. Groups of rats were fed on the lettuce; the best gain was made in those rats fed on lettuce grown in soil treated with organic fertilizer; this lettuce also contained the most chlorophyll.

Obesity as a precursor of diabetes. Case histories of 673 patients showed a high incidence of obesity at the onset of diabetes, and more than 30 per cent under 20 years of age were more than 10 per cent overweight before diabetes began. Of 1,000 patients, 579 gave a history of overeating. The author believes that education could do a great deal to help in preventing diabetes by recognizing obesity as a precursor of the disease.

Heat production of the albino rat. Metabolism remains fairly constant in the rat after 17 hours, and even after 64 hours of fasting the metabolism is essentially the same as it was 17 hours after the ingestion of food.

Modern Hospital

Vol. 32, March, 1929

* Organizing and managing a dietary department. S. M. Gillam.—p. 140.

Vol. 32, April, 1929

* Coping with overweight by means of diet therapy. L. G. Graves.—p. 62.
How social worker and dietitian may cooperate. M. L. Spiers.—p. 83.
How to prepare palatable salt poor and low protein diets. B. M. Hulsebus.—p. 124.
* Solving help and money problems in the food service department. M. W. Northrop and E. Baldwin.—p. 128.

Organizing and managing a dietary department. A report for hospital administrators is given, prepared from the returns of a questionnaire sent out by the American Hospital Association and from the study of "Labor Organization, Labor Turnover and Food Costs" made by the American Dietetic Association.

Coping with overweight by means of diet therapy. A summary of replies received by the author in answer to a request for an expression of opinion upon the vital factors relating to overweight is listed.

Solving help and money problems in the food department. Results of the study in New York Hospitals of labor costs and turnover based on the questionnaire sent out by the American Dietetic Association are given.

Western Hospital and Nurses Review Combined with Food Facts

Vol. 12, February, 1929

* The diet of the nursing mother. W. M. Happ.—p. 17.
The Hawaiian pineapple industry. A. L. Dean.—p. 19.
The use of normal diets in the treatment of diabetes. Article 5. W. D. Sansum, P. A. Gray and R. Bowden.—p. 26.
The problem of food service. W. F. Vail.—p. 36.

Vol. 13, March, 1929

Food allergy, its control by elimination diets. A. H. Rowe.—p. 17.
The artichoke in California. R. H. Gast.—p. 28.
The use of normal diets in the treatment of diabetes. W. D. Sansum, P. A. Gray and R. Bowden.—p. 30.

Vol. 13, April, 1929

• The dietitian in relation to the community health program. E. M. Geraghty.—p. 17.
The use of normal diets in the treatment of diabetes. W. D. Sansum, P. A. Gray and R. Bowden.—p. 21.
Reindeer meat. Mrs. C. G. Lomen.—p. 23.
The elimination diet for the diagnosis and treatment of food allergy. A. H. Rowe.—p. 25.

The diet of the nursing mother. The diet of the nursing mother must contain adequate protein, carbohydrate, fat, minerals and vitamins. In addition, the diet must be palatable, varied and satisfying. The influence of the physic factor on milk secretion plays a part too great to be overlooked.

The dietitian in relation to the community health program. The author notes the necessity of choosing a suitable dietitian to carry on the community health program; the dietitian's requisites and her important relation to the family are discussed.

NEWS NOTES

American Dietetic Association. The annual meeting will be held October 7 to 10, 1929, at the Hotel Statler, Detroit, Michigan. The program will include meetings of the administration, diet therapy, education, and social service sections.

The American Home Economics Association meets in Boston, July 1 to 5, 1929. The four programs devoted primarily to subject matter are scheduled for Tuesday afternoon. The one on food and nutrition, which is being planned by the food and nutrition section in coöperation with the health education and research committees, will be devoted to brief reports and discussions of research in progress. Two simultaneous meetings will consider different phases of the general subject, the house. One of these, arranged jointly by the homemakers and extension sections and the research committee, will include two papers by outside speakers and informal discussions by the members. The other meeting on the house deals with its furnishings; it is in charge of the related arts section and is to be held at the Boston Museum of Fine Arts. The meeting devoted to the fourth general subject, the family, is being arranged by the section on social and economic problems with the coöperation of the homemakers and extension sections and the research committee.

Other meetings of interest to dietetians:

Catholic Hospital Association, Chicago, May 6 to 10.

American Protestant Hospital Association, Atlantic City, June 14 to 21.

American Medical Association, Portland, July 8 to 12.

The Annual Meeting of the American Conference on Hospital Service was held in conjunction with the Annual Congress on Medical Education, Medical Licensure and Hospitals, on February 19th at the Palmer House, Chicago. The program was devoted to "Hospitals for Convalescents" and Convalescent Care in general. Dr. E. H. Lewinski-Corwin, Executive Secretary of the Committee on Public Health Relations, New York Academy of Medicine, in his scholarly address on "Convalescent Centers" presented a vivid picture of the need for facilities for the care of convalescents in America where only two per cent of the hospital beds are used for this type of service. Dr. Corwin made an appeal for greater interest in the care of the canvalescent patient on the part of the medical profession so that Convalescent Centers might be developed along the right lines. Dr. Newell C. Gilbert, Associate Professor of Medicine, Northwestern University Medical School, spoke on "Cardiac Convalescence" and the value of convalescent hospitals for certain types of cardiac cases. Dr. Carl H. Davis, Milwaukee, discussed "Obstetrical Convalescence." Dr. John S. Coulter, Assistant Professor of Physical Therapy, Northwestern University Medical School, directed attention to the value of physiotherapy in convalescence.

The Conference, with the full approval of the Board of Trustees and Delegates, made an agreement with the American Hospital Association to maintain and administer the Hospital Library and Service Bureau on and after June 30th, 1929. To give the American Hospital Association full freedom in the administration of the Bureau, Miss Donelda R. Hamlin, Director of the Hospital Library and Service Bureau since its establishment, presented her resignation to take effect June 25, 1929.

At the meeting of the delegates, the following officers were elected for 1929–1930: Honorary President, Frank Billings, M.D.,

1550 N. State Parkway, Chicago; President, Harry E. Mock, M.D., 1441 Peoples Gas Building, Chicago; First Vice-President, Dr. Ralph B. Seem, University Hospitals, University of Chicago, Box 56, Faculty Exchange, Chicago; Second Vice-President, Hoyt E. Dearholt, M.D., Executive Secretary, Wisconsin Anti-Tuberculosis Association, 558 Jefferson Street, Milwaukee; Treasurer, Volney S. Cheney, M.D., 5448 South Halstead Street, Chicago; Secretary, Miss Evelyn Wood, Executive Secretary, Central Council for Nursing Education, Room 1507, 116 S. Michigan Avenue, Chicago.

The California State Dietetics Association, Northern Section met at the University of California Extension Building in San Francisco, March 22. Dr. J. C. Geiger, Professor of Epidemiology of the University of California, gave a lecture on "Food Poisoning" which was illustrated with lantern slides. Dr. Geiger included both types of food poisoning: para-typhoid and botulism. He stressed especially the possibility of poisoning from home canned foods prepared by the "cold pack" method and explained how carefully both the time and the temperature have been adjusted to render the commercially canned foods harmless.

A short business meeting was held after the talk to discuss the bill for state registration for dietitians.

On April 19, the Association met at the new Woman's Athletic Club in Oakland, April 19. Twenty-eight members were present. Miss Callahan and Miss Richardson, editors of the Sunset Magazine, were guests of the association. After dinner, Dr. Agnes Fay Morgan of the University of California addressed the dietitians on "Newer Developments of Nutrition." Dr. Morgan has been especially interested in the irradiation of egosterol and its practical value in human nutrition. Mrs. Barbara Reid Robson told of her work as Home Economics Consultant of the Hostess Cake Kitchen. She demonstrated the quality of the cake and spoke on the quality of materials used in it. Miss Haggerty, President of the Northern Section, urged all the members to attend the State Convention to be held in May.

The report of the nominating committee was submitted and the following officers were elected for the coming year: President, Mrs. Eloise Hammell, Fairmont Hospital, San Leandro; Secretary, Arlie Honeywell, Alta Bates Hospital, Berkeley; Treasurer, Emily Edson, St. Francis Hospital, San Francisco; Program Chairman, Delta Fowler, Peralta Hospital, Oakland; Publicity Chairman, Marjorie Haas, Mater Misericordiae Hospital, Sacramento; Membership Chairman, Bernice McFarland, St. Luke's Hospital, San Francisco.

The California State Dietetic Association, Southern Section, met on April 1, 1929. Dr. R. W. Lamson gave a very interesting talk on "Food Poisoning," classifying sources as follows: (1) Natural poisons—in mussels, mushrooms, etc.; (2) Animal parasites—trichina, tapeworm; (3) Plant parasites; (4) Bacterial poisons—botulism; (5) Putrefactive products—ptomaine poisoning; (6) Special poisons—as in sprouting potatoes, ergot in rye; (7) Accidental poisoning—lead, arsenic, alkali, preservatives; (8) Quantity of food—too much or too little; (9) Faulty digestion and metabolism; (10) Food idiosyncrasies.

Dr. Lamson explained that what is ordinarily thought of as ptomaine poisoning is an infection caused by bacteria of the colon typhoid type. The results are severe gastro-intestinal symptoms. Food intoxication or botulism is caused by spore forming bacteria which produce poisons in the cells and pour it out into the food media. This is slow in onset and often fatal. Weakness, lassitude, double vision and difficulty in swallowing result. Botulism producing bacteria may occur in any food and are often found in meat; ripe olives canned in glass and home canned products may also be sources of this poisoning. Animals affected suffer from "limber neck." Since many do not give routine scratch or skin test reactions in food allergies, Rowe's "Elimination Diets" have

been found useful. These diets are planned to eliminate milk, eggs, wheat and potatoes, the most common offenders.

The Chicago Dietetic Association has had very interesting meetings this year. Chief among these were two visits, which took the place of the regular meetings; the first was to the Alice Wood Infant Welfare Station. Alberta Childs had charge of the program. A representative from the Elizabeth McCormick Fund and several of the Infant Welfare nutritionists reviewed their work.

The second visit was at one of the beautiful new residences of the Y. W. C. A., the Harriett Hammond McCormick Memorial. Theresa Clow was the gracious hostess and gave everyone an opportunity to see the building and ask questions.

Adlora Maze is now at Lake County Tuberculosis Sanitarium, Crown Point, Indiana.

Margaret de Clercq is leaving Presbyterian Hospital to be at home in Kansas City for the summer.

The Association loses another member soon when Theresa Lemmon leaves the Municipal Tuberculosis Sanitarium for a summer at home in Texas.

The Cincinnati Dietetic Association meets the first Monday of every month in the Main Assembly Hall at the Cincinnati General Hospital. The officers for the year of 1928–1929 are: President, Maybelle Morgan, Bethesda Hospital; Vice-President, Gertrude Dauche, Municipal Tuberculosis Hospital; Secretary-Treasurer, Myrle Holley, Christ Hospital. At the April meeting Dr. F. H. Selkirk, of the Babies Milk Fund, University of Cincinnati, spoke on "Rickets." The members of the Nutrition class of University of Cincinnati were guests at the meeting.

Margaret Birchard resigned at the General and has accepted the position of head dietitian at the Fort Hamilton Hospital, Hamilton, Ohio. Ester Ernie, a former student at Michael Reese, replaced Miss Birchard.

Lorena Dunklin has resigned as dietitian at the Deaconess Hospital to accept a position in Chicago.

Meredith Du Puis, former dietitian at the Deaconess, has accepted a position at the Connecticut College, New London, Connecticut.

Miss Gates, a student from Barnes Hospital, St. Louis, has been appointed dietitian in the new faculty hospital to be opened in May.

At the May meeting the Association will discuss affiliation with the Amer. Dietetic Association, to be followed by annual reports and elections.

The Cleveland Dietetic Association. In December, 1928, the hospital dietitians of Cleveland reorganized and decided to rename the organization the Cleveland Dietetic Council. The April meeting was held at Glenville Hospital, Katherine Fawcett, the dietitian, being hostess, assisted by Miss Esta McNeet, Superintendent of Nurses. H. H. Beard, Ph.D., of the Department of Bio-Chemistry of Western Reserve University, spoke on the Newer Developments in Nutrition, including the results of recent experiments with amino acids, liver therapy for pernicious anemia, vitamin B therapy in pellagra and the isolation and activation of egosterol in the study of vitamin D.

The officers of the organization are: President, Mary T. Terry, Dietitian, City Hospital; Vice-president, Martha Pollard, Dietitian, Huron Road Hospital; Treasurer and Secretary, Helen Mallory, Dietitian, Mt. Sihai Hospital.

The Connecticut Dietetic Association met on February 9 at Troop Junior High School, New Haven, and enjoyed the excellent program arranged by the State Home Economics Association. Dorothy E. Shank, Director of the Research Kitchen, American Stove Company, Cleveland, Ohio, spoke on the latest research problems in her field; Mrs. Arnold Gesell, a lecturer in Child Psychology, discussed "Food Problems in Relation to Conduct." Dr. Ruth Wheeler was to have had as her subject "Nutrition of Today," but owing to illness was unable to be present, therefore Dean Annie W. Goodrich of the Yale School of Nursing very kindly offered to be the speaker of the afternoon. It will

be remembered that Miss Goodrich was one of the first superintendents of Nurses to welcome the dietitian into the hospital field. Luncheon and afternoon tea were served during the course of the program.

The April meeting took place at the Hotel Bond, Hartford, being held in conjunction with the New England Health Institute. The program was of especial value to the dietitian, consisting of the following: "The Hunger Strike in Infants," by Dr. Joseph J. Garland of the Harvard Medical School; "Value and Need of Pastuerization," by Dr. George W. Putnam, formerly of the Chicago Health Department; "Rickets as a Public Health Problem," by Dr. Alfred F. Hess of the Bellevue Hospital Medical School; "Vitamins in the Diet," by Dr. Walter H. Eddy, Teachers College, Columbia University. At the close of the program a business meeting was called to make arrangements for the May meeting and later dinner was served in one of the banquet halls of the hotel.

Audrey Yeandle resigned her position as assistant dietitian at Hartford Hospital in December and returned to her home in Stratford, Ontario. Eleanor S. Warren, who relieved at New Haven Hospital last summer, succeeds Miss Yeandle.

Doris Drury is now dietitian at Hartford Retreat, Hartford.

Mable E. Baker, who had been engaged to work in the south, is now head dietitian at Meriden Hospital, Meriden, having filled the vacancy made by the resignation of Grace E. Lawrence. Elsie M. Johnson, formerly of Bethesda Hospital, Hornell, New York, is Miss Baker's assistant.

Annette Jean Nicol, assistant dietitian at Bridgeport Hospital, was married on the 30th of March to Eric William Cross, an attorney, at the Cathedral of St. John the Divine, New York City.

The Grand Rapids Dietetic Association elected the following officers at the annual business meeting: President, Ardis Olive Bull; Vice-president, Maxine Boone; Secretary-Treasurer, Virginia Brechwald.

Monthly meetings have been held at which several physicians have discussed various diseases in relation to dietetic treatment; helpful papers have been read and reports given by the members.

Mary H. Harrington, metabolic dietitian at the University of Michigan Hospital, was a guest of the Association April 24th, at which time she discussed "Obesity," telling of recent research which Dr. Newburgh with her assistance has been conducting.

Quiggley Austin, who completed her student course at the Battle Creek Sanatarium, has accepted a position as assistant at Butterworth Hospital.

Members attending the meeting of the Southeastern Michigan Dietetic Association held in Battle Creek on April 25th and 26th were: Mary A. Harman, Ella M. Eck, Helen Bradford, and Ardis Olive Bull. Ella M. Eck of Blodgett Memorial Hospital was elected second vice-president of the Michigan State Association which was formed at the close of the session.

Massachusetts Dietetic Association. On April 30 to May 2 the New England Hotel Men's Exposition and Educational Conference, of interest to many dietitians, was held at the Copley Plaza, Boston.

Announcement has been made of the engagement of Thelma Tubbs, Chief Dietitian of the Peter Bent Brigham Hospital, to Charles B. Currier, Jr. of Boston and New York.

Marjorie Barr, a Johns Hopkins student and assistant dietitian at the Boston City Hospital, has taken the position of dietitian at the Skin and Cancer Hospital in New York.

Martha Brown, formerly at the City Hospital of Wilkes Barre, Pennsylvania, is now assistant dietitian at the Boston City Hospital.

Eva Hunt has resigned from the Beth Israel Hospital in Boston and is now at Franklin, N. H., for a short vacation.

Constance Almy, a recent Peter Bent Brigham student, is now assistant dietitian at the Ohio Valley Hospital, Wheeling, West Virginia, under Mildred Kent.

Elizabeth Bryant of the Peter Bent Brigham Hospital is now assistant dietitian to Doris Keller at Waterbury, Connecticut.

Elizabeth Connors, a Peter Bent Brigham graduate, has accepted a position at Pondville Hospital, Norfolk, Mass.

Martha Dortch, a recent Massachusetts General Hospital graduate, is now assisting Marion Floyd during the leave of absence of Rosina Vance, Chief Dietitian of the Massachusetts General Hospital. Miss Vance is at home in Winston-Salem, North Carolina. Many friends will be glad to know that she is steadily improving in health and will soon be on duty again.

Doris Benner, a recent Massachusetts General Hospital graduate, is assistant dietitian at the Metropolitan Life Insurance Company's Sanitarium, Mt. McGregor, N. Y.

The Minnesota Dietetic Association met at the Minneapolis General Hospital on February 4. The program follows: 3:00 p.m.—Trip through the hospital; 3:45 p.m.—Lecture, "Insulin and Diabetics" Dr. L. M. Maguire, U. S. Veterans' Hospital, Fort Snelling, Minn.; 4:15 p.m.—Lecture, "Diet in Gastro-intestinal Disturbances" Dr. E. L. Gardner, Minneapolis General Hospital. After the meeting, Mrs. Boies and Mrs. Mark Enz entertained at the latter's home, 3409 Emerson Avenue So., Minneapolis.

At the March meeting, the entire program was conducted by representatives of the "Wear-Ever" Aluminum Cooking Utensil Company. Members were urged to bring questions pertaining to new institutional equipment, and to the cost, care and serviceability of aluminum.

The April program was as follows: 3:00 p.m.—Business Meeting; 3:15 p.m.—A speaker from the Rochester Clinic; 4:00 p.m.—Newer Knowledge of Liver-Therapy, Dr. W. A. O'Brien, University of Minnesota; 4:45 p.m.—Series of brief talks on infant formulas and child feeding. Dinner and bridge followed at the Russian Bear Tea Room, Minneapolis. Members brought their best institutional recipes which are to be used by the Cook-book Commttee.

Joan Boeyink resigned her position at the Fairview Hospital, Minneapolis. She is now Mrs. Marshall Noble. Ruth Melges is taking Mrs. Noble's place.

Lida Burrill had to resign from the United States Veterans' Hospital at Fort Snelling because of her health. We wish a speedy recovery for Miss Burrill.

Ellen Sattre has resigned from St. Luke's Hospital, St. Paul. She is now travelling abroad. Dorothy Slocum left the St. Paul Hospital and has filled the vacancy at St. Luke's Hospital.

Mrs. R. L. Boies resigned from the Witt's Market House and has gone east with her husband. The vacancy was filled by Florence Sperry who was head dietitian at the Midway Hospital. Clara Fehning, the assistant at Midway Hospital, was made head dietitian.

The New York Dietitians' Association met on April ninth at Presbyterian Hospital. The subject of the meeting was "The Dietitian in the Out-patient Department." The speakers were Dr. Dana Atchley of Presbyterian Hospital, Lucy Gillette of the A. I. C. P., and Henderika Rynbergen of the Presbyterian Hospital. Dr. Atchley gave the physician's point of view on the subject, with some interesting historical notes as to the introduction of the dietitian into the out-patient department at Presbyterian Hospital. Miss Gillette treated the subject from the point of view of the nutrition worker in the home of the patient, with special emphasis on the necessity for adjusting the diet of the patient to meet not only the prescription of the doctor, but also the means and food habits of the patient. Miss Rynbergen then told of some of the methods in use in the Presbyterian Hospital Food Clinic.

An opportunity was then given for the members to see the dietary department of Presbyterian Hospital, including the main kitchen, the special diet kitchens, and the food clinic.

The Ontario Dietetic Association. At the March meeting an address on "A Simplified Diabetic Diet" was given by Dr. Joseph A. Gilchrist of Toronto, who is extremely well

qualified to speak on this topic since he was the first human subject used for insulin administration in its experimental stage, and he is still taking it.

The subject for the April meeting was "Equipment" and interesting papers were presented by various members.

The following is a list of officers: Honorary President, A. L. Laird; Honorary Vice-President, Violet Ryley; President, Alice C. Willard; Vice-President, Ethel Nichol; Recording Secretary, Alice Edwards; Corresponding Secretary, Edna W. Park; Treasurer, Jessie Blyth; Committee, Alice Pidgeon, Mrs. Burns.

Rochester Dietetic Association. The activities of the local association since the first of the year may be summarized as follows: The January meeting was held at the Genesee Hospital. Dr. Lyman Boynton, of the Department of Vital Economics at the University of Rochester Medical School, discussed "Food Fads." The February meeting was a bridge dinner held at West Manor Inn. Nineteen members were present. The March meeting consisted of reports and views on current magazine articles by several members of the association. This meeting was at the Highland Hospital. The April meeting was most instructive, Dr. McCann, Chief of Medical Service of the University of Rochester Medical School, gave a talk on "Edema" at Strong Memorial Hospital.

St. Louis Dietetic Association. Isabel Currie of the Missouri Baptist Hospital, has been seriously ill for the past few weeks with erysipelas, but has now returned to her work.

Margaret Birchard, a former Barnes Hospital student, has left her position with the Cincinnati General to become the head of the dietary department at Ft. Hamilton Hospital, Hamilton, Ohio.

Mary Blanche Mook, a recent Barnes graduate, will be her assistant.

Mary Williams, who is doing consultant work in St. Louis, is to be at Shriners' Hospital for Crippled Children for a short time, to work on food costs and general organization of their dietary department.

Isabel McMenamy, Instructor in Nutrition at the El Paso School for Girls, and formerly of the St. Louis Jewish Hospital, was called home to St. Louis recently by the death of her brother.

Floy Jones, formerly of Barnes Hospital, has accepted a position at Texarkana Hospital, Texarkana, Arkansas.

Margaret Denson has accepted the position of Chief Dietition at the St. Louis City Hospital.

Mrs. Emma Millard delightfully entertained the St. Louis Dietetic Association, April 15, at St. Luke's Hospital, after their monthly meeting, which was devoted to an open discussion of various hospital problems, case studies, etc. This special program, given once each year, is always one of the most interesting and enjoyable of the year.

Virginia State Dietetic Association Organized. Dietitians throughout the State of Virginia met with the Richmond Dietetic Association on February 12, 1929, and organized a State Association. The following officers were elected: President, Gertrude Brown, St. Luke's Hospital, Richmond; Vice-President, Mary Curfman, Johnson Willis Hospital, Richmond; Secretary and Treasurer, Pauline Shaver, St. Vincent's Hospital, Norfolk, Virginia; Chairman Constitution and By-laws, Mrs. Ruth Kyle, Medical College of Virginia, Hospital Division, Richmond; Chairman Publicity Committee, Ima F. Scott, Medical College of Virginia, Hospital Division, Richmond; Chairman Membership Committee, Celeste Whiteride, Retreat for the Sick, Richmond. Plans were made for a most interesting program during the coming year.

The Southeastern Michigan Dietetic Association's meetings for the year 1928–1929 have been interesting as well as diversifying. In October, Miss Ward gave a most interesting talk on, "The Work of the Visiting Housekeeper in Detroit." The November meeting was held in Ann Arbor, and reports of the National Convention were given, followed by a social gathering. In December, dinner was served at the Hotel Statler;

Dr. Dennis Kovan talked to the members and guests on, "Infant and child feeding from the medical viewpoint." The Highland Park General Hospital entertained the members in January at their Nurses' Home. Dr. Perry Severn, of the architectural firm of Berlin and Severn, gave a very instructive talk on "Food Service in the Bacon Plan Hospital." The February meeting was held at the new Harper Hospital; Mr. A. S. Emmett from Parke, Davis & Co. spoke on, "Vitamins as we view them today." In March, a social meeting in the form of a bridge party was held in Ann Arbor.

In April, the Association joined with the Michigan Hospital Association for a two-day meeting at the Battle Creek Sanitarium. The meetings were held in the new Sanitarium addition. In addition to the worthwhile talks, it was an inspiration to have an opportunity to visit this fine building. Dr. Helen Mitchell of the Sanitarium Nutrition Laboratory gave a paper on "Recent advances in nutritional research;" Mr. S. G. Davidson of Butterworth Hospital, Grand Rapids, spoke on "The value of a Dietitian in the Out-Patient Department;" Margaret Brown of the Hotel Statler, Detroit, emphasized many important points in her paper on "Cafeteria Management;" Dr. A. C. Curtis of the University of Michigan gave a most interesting paper on "Hunger and Appetite" which was discussed by Dr. N. F. Shambaugh of the University Hospital; Dr. P. L. Marsh discussed "Relation of the High Carbohydrate Diet to the High Fat Diet in the Treatment of Diabetics." Mrs. Mildred G. Day of the Kellogg Company spoke on "Educating the Public in Nutrition through Advertising." In the evening members of the Association were the guests of the Sanitarium at a banquet. Professor W. D. Henderson of the University of Michigan was the speaker of the evening.

On the second day the program was opened by Lenna Cooper who read a paper on "Educational Methods Applied to the Teaching of Dietetics to Nurses." A round table on diet therapy was conducted by Mrs. Dorothy Stewart Waller. Elizabeth Whittaker of the Michigan State College read a paper on "Undergraduate Teaching of Student Dietitians." Anna Boller was guest of honor at the luncheon following the meeting. In the afternoon a most interesting trip was taken through the Kellogg Cereal Factory after which Mrs. Day served tea. In addition to Miss Boller, the Association entertained Miss Foley of the Mayo Clinic.

During the meetings the Michigan Dietetic Association was organized and the following officers elected: Lenna Cooper, President; Elizabeth Whittaker, 1st Vice President; Ella Eck, 2nd Vice President; Mary M. Harrington, Secretary; Gladys Lahym, Treasurer.

Sylvia Hartt, dietitian at Highland Park General Hospital, has resigned and will spend the summer with her father at Whitefish Lake.

Pauline Bailey, formerly dietitian at Harper Hospital, Detroit, is now at Bronson Hospital, Kalamazoo. Miss Kirkpatrick, also from Harper Hospital, is now at the Detroit Creamery.

Recent additions to the staff of Harper Hospital are Frances Rose, Ora Mae Talley, Margaret Richert, Sophia Halsted and Bess English.

Esther Beach, formerly Administrative Dietitian at the University of Michigan Hospital, was married in February to Dr. M. R. MacGarvey, and is now living at Fort Dearborn Lodge, Dearborn.

Edith Sauers and Bertha Belle Burkle have recently joined the dietary staff of the University of Michigan Hospital. Mable MacLachlan of the same staff left May 1, 1929, to spend the summer at her home in northern Michigan.

Philadelphia Dietitians Association. At the March meeting all of last year's officers were unanimously re-elected as follows: President, Rose T. Baker, Assistant Professor of Home Economics, Drexel Institute; Vice President, Zelvetta Lemmon, Dietitian, School Lunch, Board of Public Education; Treasurer, Marjorie E. Bacheller, Cafeteria Director, Temple University; Secretary, Elizabeth Miller, Chief Dietitian, Philadelphia General Hospital. The Executive Committee members will be appointed in the

near future. The business meeting was preceded by a social supper held at the College Club, and was in charge of the Hospitality Committee who had arranged a very interesting musical program. The various officers and committee chairmen gave reports of the year's accomplishments and everyone seemed to agree that it was a banner year.

The Nominating Committee showed their appreciation by nominating all of last year's officers. Everyone expressed their appreciation, especially to Rose T. Baker, President of the Association, and Helen Gilson Chairman of the Program Committee. The group felt that the programs this year had been exceptionally well planned and of great interest. Mildred Stevens, Chairman of the Hospitality Committee, Catherine P. Hanly, Chairman of the Membership Committee, and Betty Amos, Chairman of the Publicity Committee, all gave reports of their committees' work during the year. Before adjourning, the group voted to contribute fifty dollars to the Ellen H. Richard's Scholarship Fund which the Home Economics Association of Philadelphia is raising to pay a student's expenses for college training in Home Economics each year.

The May meeting was held on May 7th at the Friends' Select School, Dr. Edward A. Strecker, Professor of Nervous and Mental Diseases, Jefferson Medical Hospital, gave a most interesting talk on "Personal Mental Hygiene." The June meeting, the last of the year, will be a dinner held at the Philadelphia Cricket Club.

Emma Smedley, Director of School Lunches of Philadelphia, has recently added three new workers to her staff: Gertrude Severns, Dietitian at Wm. Penn High School; Elizabeth Vanscoter, Dietitian, South Philadelphia High School; Ruth Silvins, Gratz High School.

Marian Monkley, Chief Dietitian, Presbyterian Hospital, is at her home in Canada on a four-month's leave of absence.

Mabel Anderson recently left the Graduate Hospital to become Manager of a Tea-room in New York State.

Ruth Jones has recently accepted a position as Chief Dietitian for the Woman's Southern Homepathic Hospital of Philadelphia.

Gertrude Corbin is now Chief Dietitian of the Children's Hospital.

Elizabeth Russell is leaving the West Philadelphia Homepathic Hospital in July to be married and later to live in Sweden.

Mrs. Janet Ward, Chief Dietitian at Hahemann Hospital, is leaving for her home in Scotland, where she will reside. Ida Harden, who has been Mrs. Ward's Assistant for a year and a half, will become Chief Dietitian.

F. I. Williams, who has been assistant to Miss Gilson at Pennsylvania Hospital for about four years, has recently accepted a position at St. Margaret's Hospital in Pittsburgh.

E. B. Dotty will be dietitian at the Private Pavilion of the Springfield Hospital, Springfield, Massachusetts.

Sister Alexis of St. Joseph's Hospital recently placed two of her dietitians in positions at Detroit.

The Philadelphia Inter-State Dairy Council has recently added a new member to the Nutrition Department, Miss Dorothy A. Lawrence, who had her training at Simmons College.

Many of the members are planning trips to Europe, South America, Canada and various other places for the summer.

CURRENT LIST OF HOSPITALS GIVING APPROVED COURSE TO STUDENT DIETITIANS

The Committee for Approval of Courses for Student Dietitians has been very gratified by the interest displayed by members in attaining the prescribed standards. Since the last convention, eleven hospitals stand newly approved upon the list. Of these, only four are making their first application this year. The balance were refused in 1928 on a basis of inadequate standards; they have used this refusal only as an incentive toward the improvement of their courses.

Twenty-three new applications were made which the committee found necessary to refuse. Of these, fourteen had inadequate standards and nine gave no course, submitting only a tentative plan. The committee felt it best to advise the applicants who met our standard tentatively, to re-apply after they had proved their courses could be worked out as planned. We hope to add these to our list by fall.

It is necessary each year for the committee to send out a form letter requesting each dietitian in charge, attached to hospitals on the approved list, to make a formal statement that the course is still followed. Unfortunately, we have often found it necessary to send out two such letters in order to get a response. To date, there are still ten hospitals whose names have been at least temporarily removed as the result of this failure to reply. When some adequate plan of inspection is available, this plan may not be necessary. Until that time, we ask that we have this coöperation from each dietitian in charge of an approved course.

Hospital	*City*	*Dietitian*
British Columbia:		
Vancouver General	Vancouver	Ethel Pipes
California:		
California Lutheran	Los Angeles	Reeva Hinyan
Hospital of the Good Samaritan	Los Angeles	Hester Wieman
Methodist	Los Angeles	Grace Ames
Scripps Metabolic Clinic	La Jolla	Helen Anderson
Highland Hospital	Oakland	Frances M. Taylor
Stanford University and Medical Schools	San Francisco	Charlotte Sloan
Cottage Hospital	Santa Barbara	Muriel Gowans
Colorado:		
St. Luke's	Denver	Thelma Franke

Hospital	*City*	*Dietitian*
Connecticut:		
Bridgeport Hospital	Bridgeport	Leslie Hunter
Illinois:		
Cook County	Chicago	Millie Kalsem
Evanston	Evanston	Louise Yeomans Gilbert
Michael Reese	Chicago	K. Mitchell Thoma
Presbyterian	Chicago	Elizabeth Hennecke
St. Luke's	Chicago	Mary Sorenson
Ravenswood	Chicago	Leota West
Indiana:		
City Hospital	Indianapolis	Amy Colescott
Indiana University	Indianapolis	Lute Trout
Methodist	Indianapolis	Mrs. Margaret Marlowe
Iowa:		
University of Iowa	Iowa City	Kate Daum
Maryland:		
Johns Hopkins	Baltimore	Phyllis D. Rowe
Massachusetts:		
Childrens Hospital	Boston	Martha Stuart
Massachusetts General	Boston	Rosina Vance
Peter Bent Brigham	Boston	Thelma Tubbs
Boston City Hospital	Boston	Margaret McGovern
Michigan:		
University Hospital	Ann Arbor	S. Margaret Gilliam
Minnesota:		
Ancker Hospital	St. Paul	Winifred Howard
Charles T. Miller	St. Paul	Eva Gregorson
Minneapolis General	Minneapolis	Jeanette Goldthorpe
University Hospital	Minneapolis	Gertrude Thomas
St. Barnabas	Minneapolis	Marion Ladner
Missouri:		
Barnes Hospital	St. Louis	Eugenia Martin
Kansas City General	Kansas City	Merle Buckles
Research Hospital	Kansas City	M. Ethel Ollis.
Nebraska:		
Lincoln General	Lincoln	Leta B. Linch
New York:		
Albany Hospital	Albany	Virginia Howard Ray
Clifton Springs Sanitarium	Clifton Springs	Helen Clarke
Lebanon Hospital	New York City	Betsy Helburn
Montefiore Hospital	New York City	Mary Northrup
Presbyterian Hospital	New York City	Louise Clarke
Rochester General	Rochester	Effie Winger
Strong Memorial	Rochester	Grace Carden
Fifth Avenue Hospital	New York City	Angeline Phillips
Buffalo City	Buffalo	Ursula Senn
North Carolina:		
Watts Hospital	West Durham	Margaret Fitzhugh
Ohio:		
Miami Valley	Dayton	L. Atta Bolender
Mt. Sinai	Cleveland	Helen Mallory
University Hospital	Columbus	Dorothy Heald

Hospital	*City*	*Dietitian*
Oklahoma:		
State University of Oklahoma	Oklahoma Ciy	Edith Tilton
Pennsylvania:		
Homeopathic Hospital	Pittsburgh	Irene Willson
Western Pennsylvania	Pittsburgh	Charlotte Addison
St. Joseph's	Philadelphia	Sister M. Alexius Gavin
Philadelphia General	Philadelphia	Elizabeth Miller
Utah:		
Latter Day Saints	Salt Lake City	Katherine Bielby
St. Mark's Hospital	Salt Lake City	Elizabeth Steelman
Virginia:		
Medical College of Virginia	Richmond	Irma Scott
Washington, D. C.:		
Walter Reed General	Washington	Grace H. Hunter
Washington:		
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Tacoma General	Tacoma	Catherine Noonan
Children's Orthopedic	Seattle	Dorothy Goodrich
Seattle General	Seattle	Mabel G. Flanley
Northern Pacific Beneficial Association affiliated with Tacoma Hospital	Tacoma	Gertrude Stephans

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